TABLE 10.2: REGIONAL PLANNING OPTIONS AND THEIR IMPLICATIONS: SUMMARY

	OPTION 1 : CONTINUATION OF EXISTING TRENDS (Paras. 333-35)	OPTION 2 : RETENTION OF NATURAL INCREASE POPULATION (Paras. 336-41)	OPTION 3 : GROWTH POINT FOR A WIDER AREA OF COALFIELD (Paras. 342-43)	OPTION 4 : REGIONAL GROWTH POINT (Paras. 344-46)
INDUSTRY AND EMPLOYMENT	Failure to fill male employment gap of 8-10,000 in 1975; serious unemployment, low activity, loss by migration. Secondary effects would be felt in local service industry employment.	8-10,000 extra male jobs would have to be provided by 1975. After 1975, growth of male jobs need not be quite so rapid and could well be generated locally. Attention would also need to be given to improving range of job opportunities (particularly for young people) increasing industrial training and providing new public transport services to main employment areas.	As Option (2) but for an additional 5,000 jobs for men travelling in from the coalfield outside the study area. Extension of appropriate public transport services outside the study area would be desirable.	As Option (3) in the period to 1975 but the rate at which male jobs were created thereafter could not be allowed to slacken off so much, if they showed signs of doing this.
POPULATION	Population increase falls away on account of net loss by migration. Migration tending to be selective.	Increase of over 100,000 by end of century, although this could mask some selective net loss of professional scientific and "white collar" workers unless measures were taken to make jobs and environment more attractive.	As Option (2), but tendency for long distance travellers to transfer into area, bringing a small additional increase in population.	As Option (3) in the period to 1975. Total of 500,000 by end of century = 140,000 over and above natural increase population.
STRATEGIC RESOURCES AND ENVIRONMENT	Less intensive use of resources, especially housing stock, central area development and strategic resources.	Strategic resources could be used at present intensity. Improvements to environment would be required if existing deficiencies are not to hold back economic growth; treatment of dereliction and pollution, extension of outdoor recreation facilities.	As Option (2). More intensive use of strategic resources.	As Option (3).
LAND FOR DEVELOPMENT: (a) industrial (b) residential, over and above capacity of land already allocated.	(a) and (b): Existing resources unused	(a) No immediate shortage, but scale of build-up would be such that two or more large industrial estates would be required, also cheap accommodation for new local industries. (b) Residential land for an extra 90,000 would be required by end of century	Substantially as Option (2), but with (a) more pressing. Need for industrial sites to be conveniently located for men travelling longer distances	As Option (3) in the shorter term, thereafter a very big planning job of "new city" dimensions. Sufficient land could be made available to ensure a choice of urban forms without excessive cost

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PART ONE: A STRATEGY - THE ECONOMIC PLANNING COUNCIL'S PROPOSALS

THE JOB TO BE DONE

1. The study upon which these proposals are baaed bas been undertaken jointly by the Research Group of the Yorkshire and Humberside Economic Planning Board and the Planning Departments of the Local Planning Authorities.

2. The Council consider that this study prepared by local government planning officers and regional officials of central government, working collectively as a single team, provides a valuable analysis which has also helped to clarify their respective roles in regional planning.

3. The study provides a survey and asseaament of the economic and social characteristics of the area. The results are aummarised in Chapter 10 which concludes with a discussion of the implications of the findinga for the planned future of the area and sets out some of the planning options which seem to be open.

4. The area is one whose main characteristics are a beavy dependence for employment on coal mining, vehicle manufacture, engineering and the construction industry, unusually good communications by road, rail and waterway to other parts of the country, including the major porta, an old-established but modernised shopping and commercial centre in Doncaster C. B., and an environment and climate superior to many other parts of the industrial West Riding. The atudy area is part of the wider Yorkshire coalfield, which faces the problems aasociated with the reduction of manpower in the coal mining induatry.

5. The assessment establishes that there are factors in the area favourable to industrial growth. The atrategic location on the national aystem of communications, both road and rail, and on one of the most important inland waterway systems in the country, is of considerable benefit. The area bas an advantage in the price to consumera of most forms of energy and in the coat of water aupplies. There are also important local resources of sand, gravel and limestone.

6. The area also offers prospects of plenty of male and female labour, now and in the future, and has a relatively youthful population.

7. There is an excellent range of industrial premises even thougb their number may be limited. The housing stock ia generally modern and the central area of Doncaater is modern and growing.

8. Since there is an adequate supply of land for housing and induatrial development, the characteristics of the area represent real potential for industrial and economic growth.

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9. As the study brings out, however, unemployment is already relatively high and a continuation of present trends would result in a gap in the number of jobs for men of 6,000 to 10,000 over the years up to 1975.

10. Unless action is taken to check the present trend, this area despite its growth potential will become one in which unemployment increases, activity rates (i.e. the proportion of the potential work-force available for work) fall, and people move away. We see no likelihood of substantial growth in employment adjoining the study area on a scale that would enable large numbers of people to live in the Doncaster area while travelling out of the area to work.

11. It is impracticable, in our view, to plan a major industrial area such as this on the basis of outward movement - tailoring the population to the work available. If Doncaster is prosperous, it will hold its population and their natural increase - which is likely to carry the population to about 360,000 by the end of the century: if people move away it will be because the area is depressed.

12. The first task is to provide at least 6,000 and possibly up to 10,000 new jobs for men by 1975 so that the area can retain its natural growth of population. This will call for appropriate regional industrial development policies of the kind which the Hunt Committee envisage for growth zones, including the establishment of industrial estates.

13. After 1975 the minimum aim ought to be to continue to hold the population of the area. This will mean sustaining the growth in employment to match the natural increase in the work-force. In our view, it is too early to say whether this means the policies referred to in paragraph 12 must be continued for a long period or whether an initial stimulus will give the area sufficient momentum to carry growth forward without them; this will need to be reviewed before 1973. But the initial stimulus there must be.

14. Even then, a considerable supporting effort would be needed from the area itself to attract industry and to stimulate industrial expansion.

15. The most important requirements in this field are to continue to build up a flow of higher-grade manpower for technical and middle-management jobs; some progress has been made in this field in recent years and needs to be maintained; to improve both the urban and rural environment; and to pursue improvements in the system of local roads for general improvement in circulation on the lines of the current road programmes.

16. In short, the area must see itself as having a special responsibility to make the most of the resources with which it is endowed. The will to do this from within the area is, in our view, going to be at least as important as any stimulus provided by central government investment and policies.

17. If progress can be made towards the minimum strategic objective set out in paragraph 13, the forces at work may well become self-genersting so that the area will not only be able to provide employment for its own increased population, but also contribute, as we would hope, towards the provision of jobs for a wider srea of the Coalfield. We do not, at this stage, take a view about the extent of success which can be achieved in this direction. We do, however, see the strategic objective for the Doncaster area embracing the concept of it becoming a focal point area within the proposals which we have made for the Yorkshire Coalfield area generally. We note that the Hunt Committee named Doncaster as a possible example of an area suitable for development as a growth zone. In our view this present study shows that Doncaster is well suited for such development.

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18. Until we have been able to complete our consideration of the potential and capacity for growth in other parts of the region and bave prepared a strategy for the region as a whole, it would be premature to reach conclusions about the Doncaster area becoming a regional growth point as envisaged by the fourth planning option proposed in the study. This possibility will need close consideration not only in the light of our regional strategy, when this has been completed, but taking account of central government policies. We are pressing ahead with the preparation of our proposals for a regional strategy as speedily as possible.

19. The proposals in this study are put forward by the Regional Economic Planning Council as part of an economic framework within which the Planning Authorities concerned, who are statutorily responsible for the physical planning of the area, are invited to prepare their plans. It has been represented to us that the implementation of these proposals would be facilitated if arrangements were made to adopt for the area the new statutory planning system introduced by the Town and Country Planning Act 1968.

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1. INTRODUCTION

1. In October 1967 it was agreed that a joint study of the Doncaster area should be undertaken by the Yorkshire and Humberside Economic Planning Board and the two local planning authorities concerned - the County Borough of Doncaster and the West Riding County Council. This decision integrated two projected studies into a single programme. First, the Yorkshire and Humberside Economic Planning Council, in considering the programme of work to follow the completion of their Review of Yorkshire and Humberside[1], had chosen the Doncaster area for further study as a possible area of growth, and had asked the Economic Planning Board to undertake this project. Secondly, the two local planning authorities had been considering co-operating in the preparation of a plan for Doncaster and the surrounding areas.

2. There was clearly much to be gained from integrating these two projects and agreement was reached on the scope of a joint study covering the regional planning stage of the work. The Standing Conference of Local Planning Authorities in Yorkshire and Humberside (of which the Doncaster Borough Council and West Riding County Council are members) was consulted on the proposal and supported it.

AIMS OF THE STUDY

3. There are two main aims of the study:-

(i) To establish the capacity of the area for growth by investigating its resources and potential in terms of social, economic and physical factors. Each factor is examined in turn and the situation in the study area compared with that in the region and in the country as a whole. In this way the major strategic assets and restraints and their degree of influence on economic growth are assessed. This provides the basic information required to achieve the second aim:-

(ii) To identify the principal options open in terms of both the overall growth of the local economy and the growth of its main components. The results will provide the analysis required for the determination of the appropriate strategy together with the steps necessary to achieve it. This in turn will provide a framework within which more detailed planning proposals (including an urban structure plan for the area) can subsequently be prepared.

1. "A Review of Yorkshire and Humberside" - Yorkshire and Humberside Economic Planning Council. H.M.S.O. 1966.

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4. The aims and scope of the study may conveniently be amplified in an outline of the contents. The bulk of the report - Chapters 2-9 - is devoted to a systematic examination of the physical, social and economic characteristics of the study area. This covers all those aspects which are considered to have a bearing on the suitability of the area for economic growth. In each case the basic question to be answered is whether the item under examination is favourable or unfavourable to economic growth. Wherever possible, the items are quantified so that they can be related to the regional and national averages. This comparative approach recognises that the attractiveness of an area to economic activity depends on its advantages (or disadvantages) when considered alongside other locations.

5. Chapters 2 and 3 of the study examine the strategic aspects of the location of the study area in relation to the rest of the country. Chapter 2 is concerned with communications and discusses the area's location in relation to the national road, railway and inland waterway systems, and to ports and airports. Chapter 3 is concerned with the study area's location in relation to resources of energy, water and surface minerals.

6. In Chapter 4 the human resources of the area are examined. The implicatione of recent population trends are discussed and a projection made of the future population of the area. The remainder of the chapter is devoted to an examination of the aspect of population most directly relevant to economic growth, the local supply of labour.

7. Chapter 5 examines the existing pattern of industry and employment and an assessment is made of future prospects in terms of the jobs likely to be available. Much of this is based on an industrial survey which was one of the principal sources of information for the study as a whole. Of particular significance to the future level of employment in the study area is the reduction of manpower in coal mining. The demand for labour is then compared with the supply, and forecasts are made of the poeition in 1975.

8. Chapter 6 deals with the social environment - housing, education and health services, shopping and community life. Aspects of the physical environment are investigated in Chapter 7, particularly the attractiveness of the landscape and the problems of dereliction and pollution. Land resources and the many factors affecting the suitability of land for development are the subject of Chapter 8, whilst the following chapter analyses the urban form - the disposition of land uses and their relationship to the local transport network.

9. This completes the survey of the characteristics of the study area. In the last chapter the findings of the previous chapters are brought together in a comprehensive assessment of the economic, social and physical features. Finally, an examination is made of the principal options which appear to be open.

THE STUDY AREA

10. Doncaster occupies a central position in the country. The study area is crossed by major road and rail routes providing access to the main population centres. It covers a section of the eastern part of the Yorkshire coalfield which is one of the

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richest and most easily worked in the country. Figures 1 and 2 show the study area in its national and regional settings; figure 3 is a general reference map of the study area and figure 4 shows the pattern of land use.

11. The study area consists of Doncaster C. B., Adwick-le-Street U. D., Bentley-with-Arksey U. D., Doncaster R. D.[2] and Thorne R. D. It approximates to a combination of the Doncaster and Thorne Employment Exchange areas. The boundaries of both sets of areas are shown in Figure 5. In most cases where the boundaries do not coincide, the areas are rural and the population is small, particularly in relation to the total for the study area. A total of about 3,000 population are within Doncaster R. D. but outside Doncaster Employment Exchange area, whilst about 10,000 population and a large colliery are within the Employment Exchange area, but outside the Rural District. In the latter case, the colliery and 8,200 of the 10,000 population are in Harworth parisb in Nottinghamshire. Part of Harworth parish and the whole of Tickhill Urban District (in the West Riding) are included in the analysis of land resources in Chapter 8, but they are not part of the study area proper.

12. The study area was defined in such a way as to be reasonably self-contained in that it includes both the homes and workplaces of the great majority of the population. In 1966, 91.2% of its 99,800 residents in employment both lived and worked within it; 12,070 people came into the area each day to work and 8,800 (8.8%) left to work elsewhere.

13. The physiography of the area is characterised by a series of outcrops running north-south and consisting of sandstones, shales and limestones which dip eastwards under more recent deposits of glacial sands and clays. It is generally low-lying, with a maximum height of about 300 ft. in the west falling almost to sea level in the east near the head of the Humber estuary. Superimposed on this north-south structure are the valleys of the rivers Don and Torne flowing in a south-west to north-east direction. The development of road, canal and rail links closely followed these structural elements. Thus a Roman road followed the high ground formed by the outcrop of the Bunter Sandstone and Magnesian Limestone and crossed the river Don at Doncaster. Also the Rother and Don Valleys provided the route for another Roman road, Ryknild Street, so that Doncaster was a road junction even in Roman times and was for that reason a garrison town.[3]

14. Major development in the area began in the 18th century when the exploitation of the exposed portion of the coalfield west of the study area led to the construction of the Dun Navigation, which became a principal route for taking agricultural produce and limestone to the industrial areas of Sheffield and the upper Don Valley.

15. The area attracted railway promoters in the 19th century because of its location on natural routes and its proximity to the mineral and manufacturing wealth of South Yorkshire. The nodal position of Doncaster on the developing railway system, together with the supplies of coal and steel nearby, favoured the location of the railway workshops at Doncaster in 1853, only five years after the railway had reached the town.

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2. A very small enclave of Doncaster R.D. - the parish of Densby, adjoining Conisbrough U.D. on the west side - is excluded from the study area in all analyses based on mapped information.

3. The contents of paras. 13-18 are based on British Landscape Through Maps - The Doncaster Area, by B.E. Coates and G.M. Lewis, Geographical Association, 1966.

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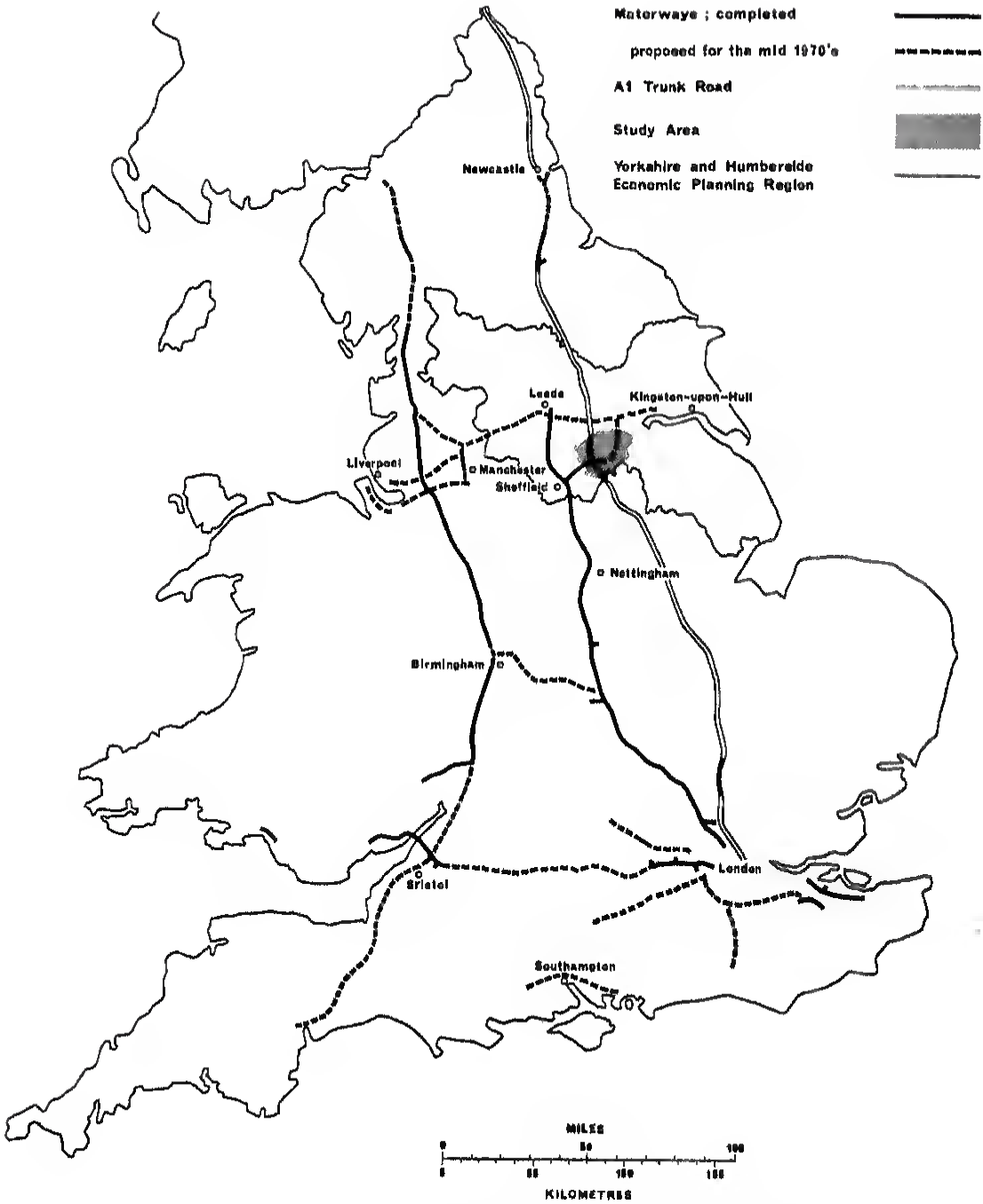

Fig.1. THE STUDY AREA AND ITS NATIONAL SETTING

Showing the motorway network

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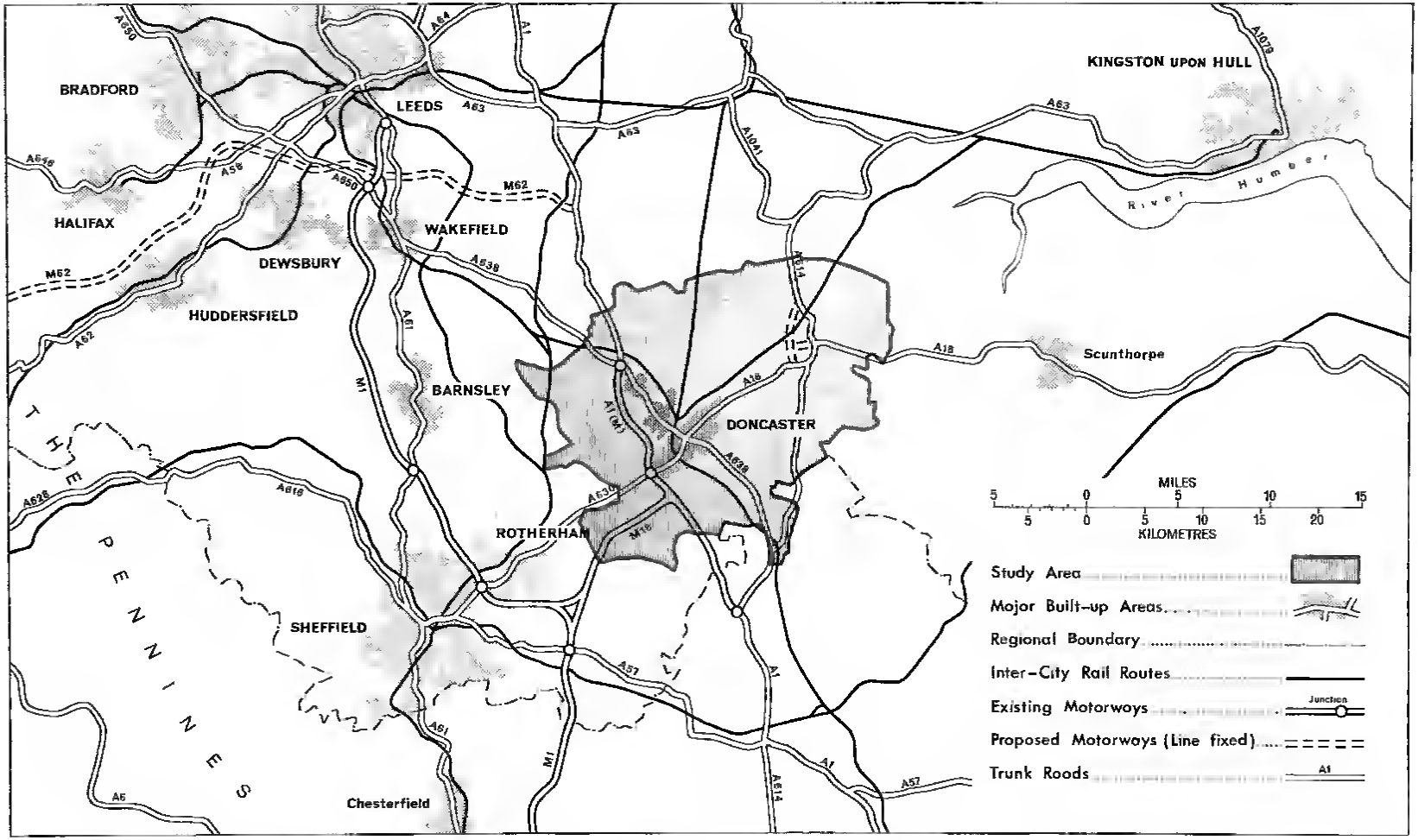

Fig.2 THE STUDY AREA AND ITS REGIONAL SETTING

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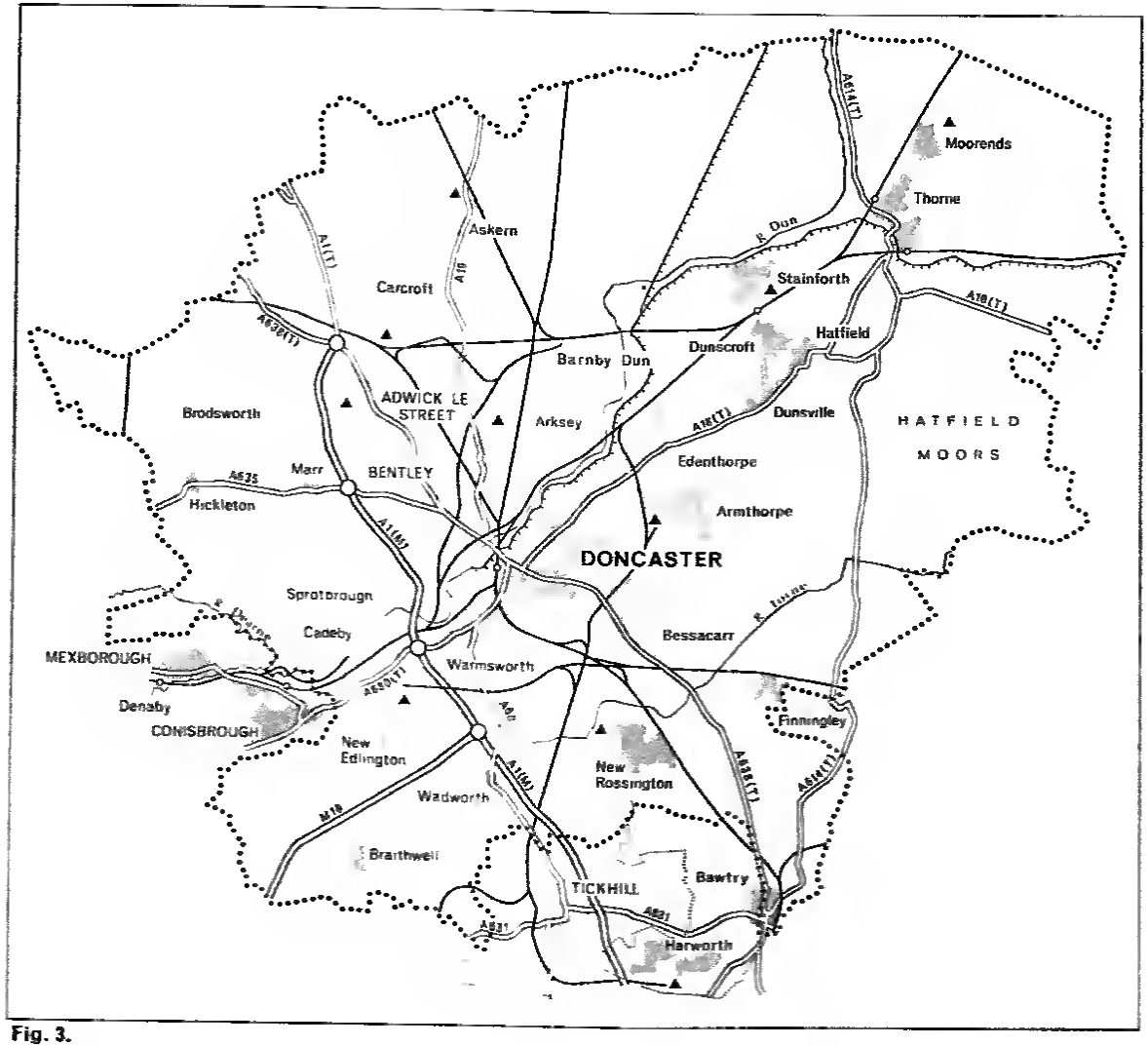

Fig. 3.

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FIG.4

16. In the present century the greatest single element in the growth of the study area has been the development of the coalfield. Exploitation of the coalfield in the study area began in the west about the beginning of the century. It is reflected, for instance, in the increase in the population of Edlington which rose from 160 in 1901 to 5,300 in 1921; similarly Askern's population rose from 560 to 3,700 in the same period.

17. However, whilst mining villages expanded rapidly, the population dependent upon agriculture in the study area declined, as did rural populations elsewhere in the country Outside Doncaster the basic pattern of development therefore consists of a number of large mining villages and small agricultural hamlets. To these have been added housing for people working in Doncaster. Most employment in the study area other than coal mining is concentrated in Doncaster where a number of important industries have become established.

18. This history of economic expansion is reflected in the rise in total population of the study area in the present century (see Table 1.1). When compared with Great Britain the population of the study area has grown significantly faster, rising from 0.13% of the national population in 1901 to 0.46% in 1966. The main growth occurred in the period 1911-1921 as employment in the coal industry grew; the first pit in the area was sunk at Brodsworth in 1907 and others were sunk in the period 1909-1926.

TABLE 1.1: POPULATION GROWTH 1901-1966.

Year	Population of Study Area	
	Number ('000)	As percentage of population of Great Britain
1901	48.3	0.13
1911	67.7	0.17
1921	116.7	0.27
1931	179.7	0.40
1951	206.2	0.42
1961	228.9	0.45
1966	238.5	0.46

19. In 1922, when Abercrombie and Johnson wrote their report on the Doncaster Regional Planning Scheme, they saw Doncaster as "the avowed metropolis of a new industrial district".[4] The industry in question was coal, and the pits were still being developed at that time. Other industries were confidently expected to follow and it was suggested that very large areas of land should be zoned for this purpose. Considerable development of manufacturing industry has indeed taken place in the intervening years, but not on the scale envisaged. Now that the expansion of the coal industry has stopped

4. Patrick Abercrombie and T.H. Johnson, The Doncaster Regional Planning Scheme, 1922 p.8. This pioneer planning study covered an area very similar to that of the present study.

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and its labour force is contracting, it is clear that future growth is wholly dependent on the development of other sources of employment. This in turn will depend on the prospects of industries already established and the extent to which the study area provides conditions favourable to new enterprise. It is the task of this report to assess the extent of the area's potential for growth and to provide the basis for a strategy which will ensure that the area makes its maximum contribution to the well-being of the region and of the country as a whole.

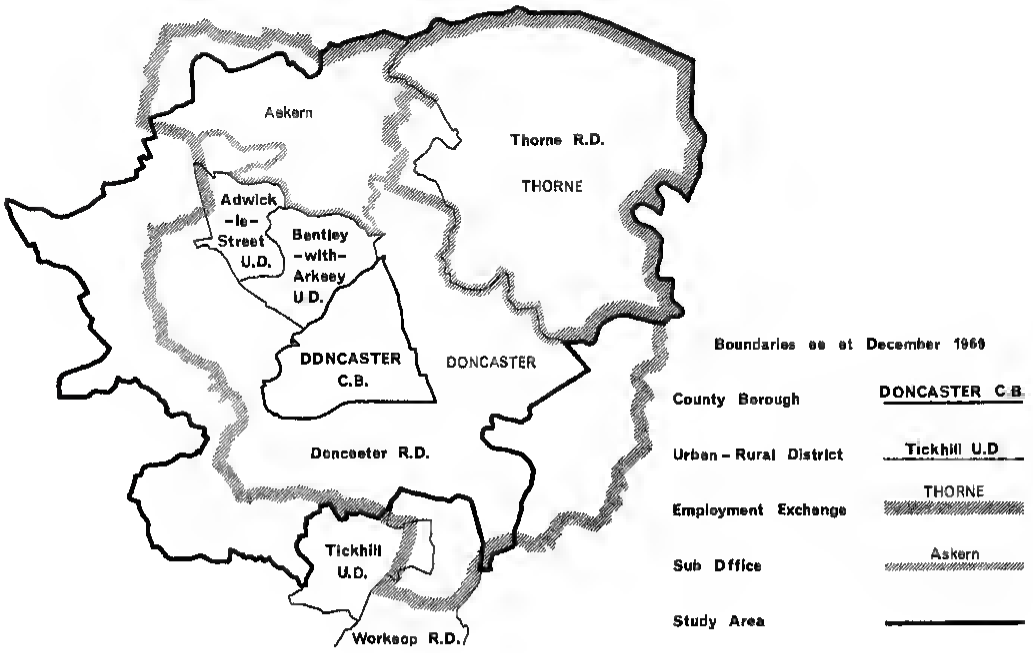

Fig. 5 LOCAL AUTHORITY and EMPLOYMENT EXCHANGE AREAS

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2. COMMUNICATIONS

20. Doncaster is singularly well placed in relation to the national transport system. It has unusually good road communications with other parts of the country and these are likely to improve still further. As a railway centre it is probably second in importance only to Crewe. It is situated on the Sheffield and South Yorkshire Navigation, one of the inland waterways of the Humber basin, which carry more than 60% of total inland waterborne traffic in Great Britain. Although the study area is poorly served by airports, the combination of excellent surface communications - road, rail and inland waterway - places Doncaster in an almost unrivalled position for ease of access among other towns of comparable size.

ROADS

THE PRESENT ROAD NETWORK

21. Doncaster has been a centre of communications since Roman times; but unlike some other towns with an important place in the history of English roads it has retained its importance right up to the present day.

22. Before the construction of the motorways there were seven major roads radiating from Doncaster -

(i) The Great North Road (Route A.1 - now Route A.638 for the length through Doncaster which was by-passed by the motorway A.1(M) in 1961);

(ii) A.19 northwards to Selby, York, Thirsk and Teesside (this road is trunk[5] north of Selby);

(iii) the trunk route A.18 eastwards to Scunthorpe and Grimsby (which also carries much heavy traffic to Thorne, Goole and North Humberside);

(iv) the A.60 southwards to Worksop and Nottingham;

(v) the A.630 trunk route south-westwards to Rotherham and Sheffield;

(vi) the A.635/A.628 westwards to Barnsley, Penistone, Woodhead and Manchester (trunk beyond the Flouch Inn, some four miles west of Penistone);

(vii) the A.638/A.650/A.639/A.65 trunk route north-westwards to Wakefield, Bradford, Skipton and Kendal.

5. A trunk route is one for which because of its national importance the Minister of Transport is the highway authority - except in most county boroughs (including Doncaster), where the county borough council is the highway authority.

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23. The only other major road in the study area is the A.614 trunk road, which leaves the old Great North Road at Bawtry and passes northwards through Finningley, Thorne (near where it crosses the A.18) and Goole to Howden, where it joins the A.63 trunk road from Leeds to Hull. It is carried over the River Ouse by the swing bridge at Boothferry. It takes much of the traffic between North Humberside and places to the south of the study area.

24. In the years following the Second World War Doncaster, like many other towns which owed their past prosperity to their position on main trunk routes, began to find the continually growing volume of traffic through the town to be more an embarrassment than an advantage. At the same time the increasing congestion in the town was becoming an impediment to the through traffic itself. In 1961 the Doncaster By-pass (Route A.1(M)) was opened; this is a dual two-lane motorway, one of the country's first motorways and part of the comprehensive improvement of the Great North Road to dual carriageway standards throughout the 300-mile length from London to Newcastle.

25. The Doncaster By-pass was only the first of a number of motorway schemes which are already having a considerable effect on communications to and from the study area. In December 1967 the London-Yorkshire Motorway (Route M.1) was completed as far north as Sheffield.[6] At the same time a spur motorway (Route M.18) was opened between Thurcroft on the M.1 and Wadworth on the Doncaster By-pass. This placed Doncaster at the apex of the triangle formed by two first-class routes to London and the South - the motorway passing close to Nottingham, Leicester, Birmingham and Northampton and the A.1 passing close to Newark, Grantham, Stamford and Peterborough. (For Doncaster's position in relation to the national motorway system see Fig. 1.)

FUTURE ROAD PROJECTS

26. Other motorways and major trunk roads currently under construction, in the programme or in the preparation pool[7] will also have an effect on the study area:-

(i) the completion in 1972 of the Lancashire-Yorkshire Motorway (Route M.62) from Worsley (west of Manchester) to Lofthouse on the M.1, its programmed extension to Ferrybridge on the A.1 and its further extension (in the preparation pool) to Gilberdyke (on the A.63 some 17 miles west of Hull). This latter extension will pass within two miles of the northern boundary of the study area;

(ii) the extension of the M.18 to by-pass Doncaster on the south side and Thorne on the west side. Both these by-passes are in the programme for completion in the early 1970s, and the extension of the Thorne By-pass to join the M.62 at Cowick is included in the preparation pool;

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6. The whole motorway from London to Leeds was completed in October 1968.

7. Schemes in the preparation pool can be expected to take their place in the firm programme as funds become available, provided that preliminary work on them has reached a sufficiently advanced stage to justify the committal of funds to their construction and to demonstrate that the scheme gives value for money.

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(iii) the improvement to dual carriageway standards of the A. 18 from the Thorne By-pass towards Scunthorpe, including a new bridge across the Trent near Keadby. This scheme is in the preparation pool, and its implementation should closely follow the extension of the M. 18 and M. 62.

These schemes will by the mid-1970s provide first-class road communications between the study area and Humberside. Later extensions of the preparation pool may well include further improvements of these east-west connections.

27. The Ministry of Transport is currently conducting a project feasibility study[8] in connection with east-west routes across the Pennines south of M. 62. One of the possibilities being considered is the construction of a new road, possibly to motorway standards, from a point on the M. 1 at Tankersley near Barnsley to Manchester. Combined with M. 18 and M. 1, this would provide a first-class route between Doncaster and Lancashire.

28. The West Riding County Council have proposed a new South Yorkshire Highway, which would run from the eastern end of the Manchester - M. 1 road mentioned above to the northern end of the Doncaster By-pass (A. 1(M)) at Red House and on to connect with the M. 18 extension. The section east of Red House could have important effects in opening up access to the area between A. 18 and A. 19 and in providing an additional crossing of the River Don. The road would also improve journey times between certain parts of the study area and certain parts of the Yorkshire Coalfield, and provide a marginal improvement over M. 18 and M. 1 for journeys from parts of the area to Lancashire.

29. Good though the study area's road communications with the rest of the country are and will be, they cannot be regarded as in all respects ideal. Some of the improvements mentioned above are not likely to be completed before the late 1970s at the earliest, and consideration has still to be given to the West Riding's proposal for a South Yorkshire Highway. In the meantime many of the routes to be improved are already suffering from serious traffic congestion. Even some of the most recently constructed or improved roads are now carrying traffic in excess of their design capacity; even parts of the A. 1 and the M. 1, particularly at its southern end where it also carries the bulk of the traffic between London and Birmingham, are theoretically overloaded and therefore providing a lower level of service than is desirable - though without serious congestion arising for some years ahead. Table 2. 1 shows the traffic volumes in August 1965 on certain main traffic routes radiating from the study area together with an indication of the extent of the overload (if any) expressed as a loading factor.

8. In some areas of the country traffic movements are so complex that wide-ranging traffic and feasibility studies are needed to identify schemes which can then be considered for inclusion in the preparation pool.

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TABLE 2.1: EXTENT OF OVERLOAD AT CERTAIN POINTS ON MAIN TRAFFIC ROUTES RADIATING FROM THE STUDY AREA, AUGUST 1965

Route	Main Areas Served	Census Point	Distance from Doncaster (miles)	No. of vehicles per day	No. of passenger car units[1] per day	Loading Factor[2]
				('000)	('000)	
A.1 (north of Doncaster)	the north	Wentbridge	10	21.1	28.8	0.87
A.18	South Humberside	near Crowle	15	9.0	14.0	1.55
A.614 (north)	North Humberside	Cowick	16	9.5	14.4	1.60
A.614 (south)	feeder to A.1 (south)	between Bawtry and Blyth	12	5.9	8.8	0.97
A.1 (south of Doncaster)	the south	southern end of Doncaster By-pass	11	21.4	29.7	0.90
A.638	Wakefield, Dewsbury, Bradford etc.	Wragby	14	7.6	11.8	1.33
M.1	the south	Friars Wash (Herts)	145	35.1	50.0 (approx.)	1.00

1. "Passenger car unit" is a measure which makes some allowance for the greater demand upon road space made by the heavier and slower vehicles. On inter-urban roads lorries and buses are each given a weight of 3; cars, vans and motor cycles a weight of 1.

2. The loading factor is a measure of the volume of traffic using a road compared with the theoretical capacity of the road. A loading factor of 1 indicates that the traffic volume is the same as the road's design capacity. As applied to many existing roads capacity is a somewhat artificial concept as widths and alignments can vary considerably over short distances and capacity theoretically fluctuates with these factors. Moreover on new roads capacities are in practice highly elastic and increases in traffic volume may merely cause an occasional slackening in speed. The loading factor can nevertheless be taken as a simple indicator of deviation from an ideal standard.

ECONOMIC SIGNIFICANCE

30. Because of the development of the national motorway system, the total population within four hours' travelling time of Doncaster will by the mid-1970s be very much greater than it is now. Thus very much larger markets and/or sources of supply will be brought within a limit that can normally be served by return trips within a single day. But the motorway system will bring similar benefits to other towns, and in order to assess its economic significance to Doncaster in comparison with its significance to other places we have calculated the total populations (1967 figures) that will be within four hours of Doncaster and a number of other selected towns in the mid-1970s. The results of this exercise are shown in Table 2.2. Of the places examined, Coventry has the greatest population within four hours' travelling time (42½ million). Luton also has over 40 million people within a four hours' limit. Doncaster, along with four other locations, is within range of 35-40 million people. Populations within reach of the peripheral areas - Southampton, Middlesbrough and Falkirk - are very much smaller.

TABLE 2.2: ESTIMATED POPULATION WITHIN 4 HOUR'S TRAVELLING TIME OF SELECTED TOWNS BY MID-1970s

Town	1967 Population within four hours' travelling time by road (millions)	Index: Total population of G.B. in 1967 = 100
Coventry	42.5	79
Luton	40.4	75
Derby	39.8	74
Gloucester	38.8	72
Warrington	36.6	68
DONCASTER	36.2	67
Cardiff	32.0	60
Hull	28.2	53
Southampton	20.7	39
Middlesbrough	20.3	38
Falkirk	6.3	12

Notes: (1) The speed assumptions used were as follows:-

(a) motorways - 50 m.p.h. (probably rather low for cars but a fair assumption for heavy goods vehicles);

(b) other roads - 30 m.p.h.;

(c) towns - 15 m.p.h.

The A.1 south of Newcastle is treated as a motorway for the purpose of calculating average speeds.

(2) The towns selected represent the major concentrations of population in Great Britain. In order to obtain a fair set of comparisons, towns have been chosen which will be favourably situated in relation to the national road network.

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31. The industrial survey carried out as part of the study (see para. 110 and Appendix C) provides first-hand evidence of the importance some manufacturers in the study area place on good road communications. The recent completion of the M.1 and M.18 links to the Midlands and the South was considered to bring significant benefits to 33 firms (employing 17,000) out of a total of 43 firms responding to a question on the importance of this development. A number of firms pointed to the contrast between the excellence of the north-south road communications and the as yet less satisfactory east-west routes.

32. The proposed extension of the M.18 from Doncaster to Humberside was seen as a significant benefit by 34 firms (employing 14,500) out of 44 firms responding. The improved access to the Humber ports for exporting was mentioned, as was access to Liverpool in connection with the construction of the M.62 across the Pennines. Twenty-nine firms (employing 14,400) out of 44 considered that they would obtain significant benefits from the M.62.

RAILWAYS

THE RAILWAY SYSTEM

33. The railway came to Doncaster in 1848, when the South Yorkshire Railway from Sheffield to Keadby was opened. Within five years the Great Northern main line from London to York had been opened (via Lincoln and Knottingley) and the railway workshops had been established in the town. In the years preceding the Second World War the workshops were producing two-thirds of the locomotives and much of the coaching stock for the old London and North Eastern Railway. In recent years activity has declined, but the Doncaster workshops are still extensively engaged in locomotive, carriage and wagon repair for the whole of the Eastern Region of British Railways and within the last four years have been comprehensively modernised.

34. Doncaster is a Divisional Headquarters of the Eastern Region - the others are King's Cross, Liverpool Street, Norwich, Sheffield, Hull, Leeds and Newcastle, with the Regional Headquarters at York. It is a freight concentration point and has a marshalling yard, but these are diminishing in importance as a result of changes in the pattern of freight traffic. The Freightliner depot for the Doncaster area is at Sheffield. As a railway centre, however, Doncaster is probably still second in importance only to Crewe.

35. It lies on one of the most important main line railway routes in the country, the East Coast main line from London to Scotland. It is the junction for two Inter-City routes, one to the West Riding conurbation (Wakefield, Leeds, Bradford etc.), the other to Goole and Hull. There are two major secondary routes, one to Scunthorpe, Grimsby and Cleethorpes and the other to Rotherham and Sheffield. There is also a less important route to Gainsborough and Lincoln. All these lines carry heavy volumes of traffic.

PASSENGER TRAFFIC

36. The East Coast main line to London is used by an average of 40 passenger trains per day in each direction, of which about 24 in each direction stop at Doncaster. The fastest cover the 156 miles between London and Doncaster in $2\frac{1}{4}$ hours. Some of

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these trains start and finish at points such as Aberdeen and Edinburgh and others use the lines to the West Riding conurbation and to Hull. The line from Doncaster to Scunthorpe, Grimsby and Cleethorpes carries about 12 passenger trains a day in each direction, the line to Sheffield about 17 and that to Gainsborough and Lincoln two or three (including one train in each direction between York and Great Yarmouth). There are also local trains on the lines to Hull, York and Leeds.

37. Intermediate passenger services on all the routes radiating from Doncaster operate at a loss. The Transport Act 1968 empowers the Minister of Transport to make grants to the British Railways Board, as from 1st January, 1969 and for periods not exceeding three years at a time, for providing unremunerative rail passenger services which he considers should be retained for social or economic reasons. The Minister has decided to make grants on the services to Hull and Sheffield for a period of three years, to Leeds for a period of two years and to York and Cleethorpes and from East Anglia to the North of England for a period of one year. All cases in respect of which grants are made will be reviewed within the period of grant, and the Minister will then decide whether to continue the grant at its existing level, to pay grant only on a reduced level of service or to withdraw the grant altogether. In the latter event it would be for the Board to decide whether to withdraw the service, although if this meant closure of a station or the withdrawal of all passenger services from a section of line the case would have to be referred to the Minister for his consent in accordance with the normal statutory procedure.

38. In the industrial survey 37 manufacturing firms replied to a question concerning the adequacy of rail passenger services. Of these, 31 appeared to be quite satisfied, a number of firms underlining the benefit of the excellent services to London. The remaining 6, however, indicated some inadequacy, the principal point being the contrast between the excellent north-south services and those across the country in an east-west direction.

FREIGHT TRAFFIC

39. Table 2.3 shows total tonnages of goods originating in or destined for the study area in 1967, broken down by commodity with a note of the principal origins and destinations. It will be seen that a substantial proportion of the traffic is coal. All the collieries in the study area are rail-connected, and at the present time some 65% of total coal production of the N. C. B's Doncaster Area is conveyed wholly by rail. It is hoped to introduce "merry-go-round" trains to transport coal from Brodsworth and Rossington collieries to Thorpe Marsh and other power stations, and also to serve the new coal jetty at Immingham now under construction. However, a large proportion of the production of the Area - 15% - is carried wholly by road. The provisions of the Transport Act 1968 are likely to make it necessary for a road haulier to obtain a licence to carry coal in a vehicle exceeding 16 tons gross weight, and this licence would be refused if it could be shown that the load could be carried at least as economically and efficiently by rail as by road. On the face of it this measure could have the effect of directing more coal traffic to rail but the extent to which this would actually happen would depend partly on the ability of the railways to carry additional coal traffic and, more importantly, on the changing markets for coal, which are probably more likely to determine the allocation of traffic as between road, rail and canal than is the new licensing system.

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TABLE 2.3: RAIL FREIGHT TRAFFIC ORIGINATING IN OR DESTINED FOR THE STUDY AREA, 1967

Commodity	Originating in Study Area	Principal Destinations	Destined for Study Area	Principal origins
	('000 tons)		('000 tons)	
Coal and coke	2, 220	Thorpe Marsh Keadby Scunthorpe Immingham London	300	Yorkshire Coalfield
Ores (limestone)	82	Scunthorpe Rotherham	-	-
Iron and Steel (scrap)	15	Sheffield	-	-
Glass products	30	-	-	-
Other	90	-	60	-

40. Compared with the coal and coke traffic and the movement of limestone from local quarries to steel works at Scunthorpe and Rotherham, the traffic generated by manufacturing firms in the study area appears small. Although Doncaster's advantageous situation on the rail network was appreciated, a number of firms in the industrial survey recorded some difficulty, principally concerning delay and unreliability. These criticisms refer to the system as a whole rather than to the Doncaster area in particular, although some mention was made of the lack of a Freightliner depot at Doncaster. Whether or not potential traffic in the area is sufficient to justify a Freightliner depot is a matter for commercial judgement. At least in the present stage of development Doncaster must look to Sheffield as the centre for handling containers carried by rail.

CAPACITY OF THE RAIL SYSTEM

41. There is undoubtedly some surplus capacity on the rail routes radiating from Doncaster - i.e. capacity which is additional to what the railways need for sound commercial reasons, such as to cope with predictable peaks or to assist operational efficiency. Appendix B to the Report of the Joint Steering Group (published as an Annex to the White Paper on Railway Policy, Cmnd. 3439) considers the question of surplus capacity on British Railways generally; one of the routes studied was the East Coast main line from King's Cross to Doncaster. The Study identified some surplus capacity which would permit the running of an additional 36 express passenger trains or 18 slow freight trains per day.

42. British Railways are currently developing, with financial support from the Ministry of Transport, an advanced passenger train capable of speeds on ordinary track of up to about 150 m.p.h. It is hoped that two or three such trains might be in experimental service by the early 1970s although it would probably be the late 1970s

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before the trains began to appear in any number. The East Coast route is one of a number of obvious candidates for such a service. Trains of this kind, if successful, could bring Doncaster within a 90-minute journey of London.

INLAND WATERWAYS

43. Although the inland waterways play only a minor part in national freight transport - in 1967 they carried less than 0.5% of total tonnage and less than 0.15% of total ton-mileage - they assume a rather more important role in Yorkshire and Humberside. The inland waterways of the Humber basin carry more than 60% of total inland waterborne traffic in Great Britain. The study area is served by the Sheffield and South Yorkshire Navigation, which is owned and managed by the British Waterways Board and extends from Sheffield to Keadby on the River Trent, with the New Junction Canal providing a link to the Aire and Calder Navigation. The system thus links the heavy industries of the Sheffield, Rotherham and Doncaster areas with Goole and the Humber ports. From Sheffield to Hull takes about 14 hours navigating.

44. A maintained water level allows access by vessels drawing up to 7' 6" as far as Rotherham and 7' as far as Sheffield. Trains of compartment boats (moving a total of about 700 tons) can navigate via the New Junction Canal to Hexthorpe, about one mile above North Bridge, Doncaster. Normal craft up to 250 tons can also navigate this far, but upstream of this point the short (63ft.) locks and other limiting factors restrict navigation to craft of about 100 tons as far as Rotherham and 90 tons as far as Sheffield. There is warehouse accommodation at Doncaster, Rotherham and Sheffield; the waterside terminal and storage facilities at Rotherham have recently been extensively developed by the Board to serve the Rotherham and Sheffield areas.

45. Although the British Waterways Board themselves opsrate a small freight-carrying fleet on the waterways, most of the traffic is horne in the craft of independent operators. Total traffic carried on the Sheffield and South Yorkshire Navigation amounted to 840,000 tons in 1967, mostly local coal for power stations near the canal banks or for shipment through Goole, plus imports of general cargo for the South Yorkshire area. Table 2.4 hreaks this traffic down by commodity and, in respect of traffic originating in or destinsd for the study area, principal origins and destinations. General merchandise traffic (i.e. excluding coal and oil) is growing but the Sheffield and South Yorkshire Navigation has recently lost some oil traffic. It will be seen, however, that coal remains a highly important traffic, although the volume of gas coal conveyed to Goole for coastwise shipment is dropping. All coal from the study area to the power stations is carried by either rail or water. This is in spite of the fact that of all the collieries in the study area only Hatfield is water-connected: in 1967, 293 thousand tons of waterborne coal from the study area were conveyed to Doncaster Wharf by road and shipped from thers. The use of the waterways by manufacturing firms in the study area is minimal, but two boat building firms and one other firm indicated that an improvement in waterway facilities would bring them significant benefits.

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TABLE 2.4: TRAFFIC ON THE SHEFFIELD AND SOUTH YORKSHIRE NAVIGATION 1967

Thousand tons

Commodity	Total Traffic	Originating in Study Area	Of which principal destinations	Destined for Study Area	Of which principal origins
Coal and coke	692.8	692.8 (including Denaby and Cadeby)	Doncaster Power Station Doncaster Gas Works Flixborough, Goole, Hull and Beverley	-	-
All metallic ores	42.3	-	-	-	-
Iron and Steel	8.2	-	-	0.5	Hull
Manufactured Goods	0.8	0.3	Hull	-	-
Other	95.5	-	-	12.1	Immingham, Hull

46. The Transport Act 1968 provides that the canals and inland navigations of the British Waterways Board shall be divided into three distinct categories:-

(a) "commercial" waterways (about 340 miles), to be principally available for the commercial carriage of freight (though pleasure craft will be able to use these waterways as they do now);

(b) "cruising" waterways (about 1,100 miles), to be principally available for cruising, fishing and other recreational purposes;

(c) the "remainder" (about 600 miles), which are to be dealt with in the most economical manner possible.

The greater part of the Sheffield and South Yorkshire Navigation (from the bottom lock at Tinsley to its junction with the River Trent at Keadby) and the New Junction Canal are included in the "commercial" category.

47. The British Waterways Board consider that the potential capacity of the Sheffield and South Yorkshire Navigation is considerably in excess of the 840,000 tons carried in 1967; they put it at 2m.-3m. tons per annum. In 1967 the Board submitted to the Minister of Transport a proposal for a major improvement of the navigation which would, in effect, enable vessels of up to 500 tons (as on the Aire and Calder Navigation) to use the Sheffield and South Yorkshire Navigation as far as Rotherham. The Minister decided that the evidence submitted did not provide sufficient economic grounds for approving the Board's proposals, which involved capital expenditure of the order of £2½m. This decision did not, however, preclude a further scheme for the

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improvement of the navigation being considered at some time in the future, provided always that a proper return on capital could be shown.

48. Future prospects for the Sheffield and South Yorkshire Navigation are very much dependent on the future of coal for electricity generation and the means of petroleum distribution. As far as general merchandise is concerned it is expected that waterways will remain competitive for goods having their origin and destination within about eight miles of a waterway terminal - although 30-ton lots is the lower limit which the Board wish to attract. Although trade increases are unlikely to be spectacular, opportunities for expansion of present traffic do exist, and there are possibilities of attracting new traffics. One such possibility is that firms processing low unit cost raw materials and bringing these in through the Humber ports might locate on the banks of water navigable by barges and transport their raw materials from the docks to their plant by water.

ACCESS TO PORTS

49. Three of the country's major ports - Hull, Manchester and Teesside - are within less than three hours of the study area by road. Even London, the country's largest port, is only four to five hours away by motorway. Rail communication with the Humber ports, Teesside and London is also excellent, as are inland waterway connections with the Humber ports. By the mid-1970s proposed road improvements should have brought Hull to within little over an hour, Manchester to little over two hours and Liverpool less than three hours.

AIRPORTS

EXISTING FACILITIES

50. Although well served by road, rail and inland waterway, the study area is poorly served by airports. There are only two civil airports in the whole of Yorkshire and Humberside - Yeadon and Brough, both some 36 miles by road from Doncaster - and of these Brough is likely to close within two years following a recent planning decision permitting a 600 ft. chimney at a factory less than two miles away. Both the East Midlands Airport at Castle Donington and Manchester (Ringway) Airport are used by passengers from the study area; they are both some 58 miles by road from Doncaster, but because Castle Donington is only two miles from a junction on the M.1 it is closer in time, being only about an hour's drive away. Many businessmen and residents from the study area use London (Heathrow) Airport as the U.K. terminal of overseas flights, employing surface transport to get to and from it. There are also airfields used by private and business operators, the most important of which are at Netherthorpe (Sheffield), Crosland Moor (Huddersfield) and Pocklington (York) and other minor airstrips in the vicinity of the study area. In the study area there are military airfields at Finningley and Lindholme, of which the latter is also available for civilian use provided that prior permission is obtained. There is a grass airfield at Doncaster, close to the racecourse, which is owned by Doncaster County Borough Council.

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51. Yeadon. The Leeds and Bradford Airport at Yeadon is situated about eight miles north-west of Leeds. There are numerous scheduled services which in the summer of 1968 provided return flights to London, Jersey, Dublin, Belfast, the Isle of Man, Guernsey, Amsterdam, Dusseldorf, the East Midlands airport at Castle Donington, Glasgow, Paris and Ostend. Daily return flights in the summer of 1968 were available to London, Duhlin, Belfast, Jersey, Guernsey and the Isle of Man. The maximum runway length is 5, 400 feet, but planning permission is being sought to extend this to 7, 300 feet to accommodate the more demanding aircraft now being used by many airlines. Since Yeadon is about one hour by car from Doncaster (and that in the wrong direction) its value to travellers to London from the study area is minimal; but it is still one of the only two civil airports (the other being Castle Donington - see paragraph 52 below) that combines reasonable proximity to the study area with a fairly wide range of destinations which can be reached by scbeduled services (and which cannot be reached equally conveniently by surface transport). The centre of Glasgow can be reached from Doncaster (via either Yeadon or Castle Donington) in about $3\frac{1}{2}$ hours; this compares with more than five bours by train.

52. Castle Donington. The East Midlands Airport, opened in April 1965, has no London service because of the short flight distance and the competition offered by both rail and road. But extensive services are operated to a wide range of U. K. destinations (including Glasgow, Edinburgh, Belfast, the Isle of Man, Jersey, Guernsey, Liverpool, Southend and Stansted) as well as to Dublin, Paris, Ostend, Barcelona, Palma and Basle. Passengers handled rose from 112, 000 in the first year of operation to over 236, 000 in the third. Runway extensions to 7, 500 ft. will allow the operation of short-haul jet aircraft within the next two years. Extensions up to 9, 000 ft. could be accommodated if necessary.

53. Manchester (Ringway). Flights go to many parts of the world and planned runway extensions will provide facilities for maximum weight take-off for the principal transatlantic aircraft. The maximum runway length is now 9, 000 ft. and the possibility of a further extension in the future is currently being studied. This airport attracts custom from places as far afield as the East Riding and Lindsey. Completion of the Lancashire-Yorkshire Motorway (Route M. 62), and even more the possibility of an improved M. 1 - Manchester route as described in para. 27, will increase tbe attractiveness of Ringway to the study area.

54. There is a keen interest in executive and business aircraft ownership and charter in Yorkshire and Humberside generally, and the Doncaster area has its full share in tbis interest. The grass airfield at Doncaster is used for business flying, and the special attraction of the racecourse has encouraged intensive seasonal use of this airfield by private parties. The Doncaster County Borough Council, the owners of the airfield, leased it in May 1968 to South Yorkshire Airport Ltd. for a period of ten years for use by charter flights, executive flying and private flying by the recently formed Doncaster Flying Club; an aerodrome licence was granted by the Board of Trade in mid-1968. In the industrial survey manufacturers were asked whether tbey considered that the possible re-opening of Doncaster Airport would be of any significant benefit to their firms. 12 firms (employing 7, 200) out of a sample of 51 replied "yes", indicating a good deal of local interest.

PROPOSED AIRPORT AT THORNE

55. In June 1966 the Consultative Council for Airport Development in Yorkshire and Humberside, a body representative of local planning authorities and other interested

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parties in the region, commissioned a study of the airport requirements of the region from Alan Stratford and Associates, consultants in aviation transport and operational research.

56. The most important of the conaultants' recommendations, particularly from the point of view of the Doncaster area, was for a major new international alrport between Goole and Thorne against the time when Ringway reaches saturation point by 1980. The consultanta consider that the best locations lie south of the proposed extension of the M.62 and east of the River Don, and that the most favourable location would be on Thorne Waste, bounded on the north by Goole Fields, on the east by the county (and study area) houndary, on the south by a line hetween Thorne and Crowle and on the west by the main Doncaster-Hull railway line. This would place the proposed airport wholly within the north-eastern corner of the study area. The consultants expect that in the first year of operation passenger traffic at the new airport might not exceed 100, 000 but that within five or six years it should reach one million per annum. Air cargo traffic would also be substantial, and the airport might well become a focal point for storage and containerisation depots. The West Riding County Council have already decided to safeguard the proposed airport site against other development that might conflict with it, and design studies are proceeding. The three runways would initially he 8, 530 ft., 4, 000 ft. and 8, 000 ft. in length; the first two would ultimately he extended to 12, 470 ft. and 10, 660 ft., and there is room to extend the first and third to 16, 000 ft. each.

57. It ia no part of the function of the present atudy to argue the case for a msjor international airport in the eastern part of the study area in preference to other locations within the region or elsewhere. On the face of it this ares would offer considerahle advantages - it would he close to the focal point of the proposed motorway system between A.1 and both banks of the Humber; the motorways west of the A.1, of which this system would be an extension, would hring a very large part of the industrial West Riding (not to speak of practically the whole of Humberside) within 45 mlnutes of the airport; and it could be sited on largely waste ground in an area where flight paths would avoid all major centres of population. It would have considerable implications for the study area both as a source of new employment and as a communications centrc. But there may well he other considerations which tell in the opposite direction. Board of Trade analysis of the traffic growth prospects does not support the conclusion that Manchester Airport will reach saturation point by 1980 and suggests that the need for an alternative major airport may not arise before the 1990s - though any large-scale development of Humberside might radically affect thia thinking. In addition, in the case of the Thorne proposal, there are coal meaaures below the site; these are the subject of current discuaaions hetween the National Coal Board and the West Riding County Council.

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SUMMARY

(i) The study orea already has unusually good road communicatioos with other parts of the couotry, although the east-west routes are not as good as the north-sooth.

(ii) Road schemes curreotly under construction, in the programme or in the preparation pool will hy the mid-1970's greatly improve access hoth to Humberside and to Lancashire.

(iii) Doocoster will in the mid-1970's have ahove-average occess to consumer marketo and/or sources of supply hy rood.

(iv) As a railway centre Doncaster is prohobly second io importance only to Crewe.

(v) Rail passeoger services on the north-south routes are excellent; those oo the east-west routes are not so good.

(vi) Rail freight traffic origioating io the study areo is over 90% coal.

(vii) There is surplus copacity on the rail routes radiating from Doocaster.

(viii) Doocaster is situated on one of the most importaot inland waterway systems in the country.

(ix) There is already good access to a number of the couotry's major ports; this will improve still further by the mid-1970's.

(x) The study area is poorly served by airports providing servlces to a wide range of destioatioos, but there is a grass airfield at Doncaster which is used for charter flights and executive flying.

(xi) The West Ridiog County Council have safeguarded a site at Goole/Thorne for a major new interoational oirport. If this project materialises it will have important implicatioos for the study orea.

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3. ENERGY, WATER AND SURFACE MINERALS

58. This chapter describes the resources of energy, water and surface minerals in the study area and investigates the extent to which they represent an economic advantage in comparison with other areas. The analysis uses information on the prices normally charged to industrial consumers, but it should be noted that prices may well be lower to consumers who use very large quantities or who negotiate special contracts with suppliers.

ENERGY

59. For the analysis of energy costs, the price of each type of energy in the study area is compared with the price in Manchester, Newcastle-upon-Tyne, Birmingham and London, selected to represent the major industrial areas elsewhere in the country. In the cases of electricity and gas, the prices quoted are those charged by the Board covering the area within which these cities are located.

COAL

60. The development of the coalfield in the study area has been closely linked to the exploitation of the Barnsley seam, which is one of the country's richest. There are huge reserves of coal in other seams of which the High Hazel, Dunsil, Parkgate and Thorncliffe are being worked but provide, so far, only a small proportion of the area's output. In 1968 the ten collieries in the study area produced some 7.3 million tons. Local dependence on coal as a source of energy has lessened with the introduction of new fuels but is still important in industry, in power stations and as a raw material for the manufactured fuel plant at Askern. Considerable tonnages of coal are sold outside the study area for the domestic, general industrial, power station, coking and export markets.

61. In the heart of a coalmining area the delivery costs of coal from collieries to consumers are very low. In the greater part of the study area, delivery charges are 9-10 shillings per ton (Thorne R. D. is slightly more at 11s. 4d.) whilst London industrialists by comparison pay about 45 shillings per ton for coal to be delivered from the North Midland Coalfield. Pithead prices vary widely between coalfields and Doncaster also benefits in this respect. As a result, the delivered price of coal in the study area is low. Table 3.1 shows the cost per therm at delivered prices for selected locations, with Doncaster prices the lowest.

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TABLE 3.1: GENERAL INDUSTRIAL COAL PRICES AT SELECTED LOCATIONS

Delivered price (pence per therm)

Location	Washed Singles	Washed Smalls
Doncaster study area except Thorne R.D.	4.58	4.38
Thorne R.D.	4.79	4.60
Manchester	5.79	5.50
Newcastle-upon-Tyne	5.35	5.23
Birmingham	5.74	5.63
London (east)	5.65	5.60

ELECTRICITY

62. The study area contains two power stations, a large modern station at Thorpe Marsh of 1,100 MW capacity and a smaller station of 130 MW capacity at Doncaster. Both are connected to the national grid and the area is a net exporter of electricity at present. There is an advantage in industries being located near to generating capacity on account of the saving in the capital costs of the distribution system and the reduction in transmission losses. Energy losses during the transmission of electricity from the Central Electricity Generating Board to Area Electricity Board supply points amount to about 3% of total national production. There is a variation around this figure which reflects in part the distance of the consumer from power stations. It follows that if large consumers of electricity are located near to generating plant then transmission losses would be reduced and significant savings could be made. However, these savings would not be reflected in local prices, as this overall loss of 3% is averaged out in the bulk tariff which the Central Electricity Generating Board charges the Area Electricity Boards. (Similarly distribution losses are averaged out by Area Boards in their tariffs to the different classes of consumers). Thus the saving to the electricity supply industry of consumers locating close to generating capacity is not reflected in the tariffs, and consequently there is no incentive to consumers to locate there.

63. Although the Central Electricity Generating Board is moving towards standardisation of its charges to Area Boards there is some variation in the price to consumers in different areas since Area Boards are autonomous in fixing their tariffs. Table 3.2 shows the present position and is based on standard tariffs published in selected Area Board reports for 1967-68. Of the five prices listed, only one - for the North East - is lower than Yorkshire.

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TABLE 3.2: ELECTRICITY PRICES OF SELECTED AREA BOARDS

Area Board	Average Price per unit (pence) for all industrial consumers	Equivalent Average Price per therm (pence) (see Note 2)
Yorkshire	1.458	42.7
North West	1.504	44.1
North East	1.370	40.1
Midland	1.660	48.6
London	1.987	58.2

Notes: 1. The average prices shown could alter significantly for individual industrial consumers, dependent upon:-

(a) whether or not the Area Board requires a capital contribution for making the supply available. Such contributions are not included in the figures given;

(b) total load requirements, and their distribution through the day;

(c) the availability of special terms if the charges under the published tariff are considered inappropriate.

2. The equivalent price per therm may seem high, but it must be remembered that the thermal efficiency of electricity for most industrial processes is 100% whereas the thermal efficiency of other fuels involved in a similar process would be considerably lower.

GAS

64. The study area is served by the East Midlands Gas Board, with the exception of Adwick-le-Street which comes under the North Eastern Gas Board. At present town gas is supplied by the Doncaster gasworks, the Dinnington gasworks and the National Coal Board's Manvers coke ovens. The principal feature of the district, however, is its proximity to the number one North Sea gas feeder main which passes south of Doncaster. The local industrial gas distribution system is currently being converted to natural gas and the general conversion of the whole system in the area is planned to start in May 1969.

65. Each Gas Board has its own tariff system with varying standing charges and commodity price ranges which to some extent reflect the quantity of gas sold to industrialists in the region and the costs of producing and supplying it. Because there is a wide range of prices and quantities (and to some extent costs) comparison is difficult. A consumption of 20,000 therms per quarter has been taken as the basis for calculating the cost of gas in each Board area. In 1968 the price per therm (in pence) was as follows:-

East Midlands	14.9
West Midlands	17.5
Northern	15.8
North Eastern	17.6
North Thames	18.5
North West	20.9

The range of prices is wide, with the East Midlands price the cheapest.

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OIL

66. Most of the major oil companies supply a range of industrial and motor fuels to the study area. In the industrial market for industrial fuel oils and motor fuels (petrol and derv) for consumption by commercial users, prices are fixed according to a zone system largely based on pre-1939 ports of entry of refined products, with some later amendments to take account of the construction of refineries. Thus the advent of refineries on South Humberside may eventually result in zone changes, but these are unlikely to affect prices in the study area.

67. There are three zones in the industrial market; inner, outer and general. Doncaster lies in the outer zone. The wholesale price is a halfpenny a gallon more than in the inner zone, representing an additional fuel cost of some 5%. But firms in the general zone pay a further halfpenny per gallon which results in their fuel costs being some 10% above those in the inner zone.

68. In the retail market (i.e. supplies of motor spirit and derv through garages) there are five zones and Doncaster lies in the third. Zones 4 and 5 comprise the remoter and less populated parts of the country. Table 3.3 shows the price zones for both retail and industrial oil for the selected industrial centres.

TABLE 3.3: OIL PRICE ZONES FOR SELECTED LOCATIONS

Area	Industrial (wholesale) price zones (Range 1-3) see para. 67	Retail price zones (Range 1-5) see para. 68
Doncaster	2	3
Manchester	1	1
Newcastle	1	1
Birmingham	3	2
London	1	1

Note: In each case, zone 1 is the cheapest, and the price differential between zones is ½d. per gallon.

SUMMARY

69. The previous paragraphs have set out the sort of energy prices which industrialists might expect to pay in the Doncaster area compared with other areas, on certain broad assumptions. Table 3.4 summarises the position and shows that the study area has a price advantage over the other areas selected in respect of coal and gas. Local electricity prices are bettered only by those in the area of the North Eastern Electricity Board. For heavy fuel oil the study area is less favourably placed and shows a price advantage only in comparison with the Birmingham area.

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TABLE 3.4: FUEL PRICES AT SELECTED LOCATIONS

Location	Indices of energy prices (Doncaster price = 100)			
	Coal (see teble 3.1)	Electricity (see table 3.2)	Gas (see para. 65)	Heavy Fuel Oil (see para. 67 and table 3.3)
Doncaster	100	100	100	100
Manchester	126	103	159	95
Newcastle	115	94	124	95
Birmingham	125	114	111	105
London	122	136	141	95

WATER SUPPLY

70. The Doncaster and District Joint Water Board supplies the whole study area together with Conisbrough U. D., Tickhill U. D., Maltby U. D. and Isle of Axholme R. D. The study area accounts for 83% of the population of this wider area, 85% of its total water conaumption and 87% of industrial (metered) consumption. The account which follows refers to the whole Water Board area.

71. Present resources amount to 16.6 m. g. d.; 15.3 m. g. d. from underground sources in the Bunter Sandstone and 1.3 m. g. d. from surface supplies. To augment its resources, the Board is to develop four further boreholea wbich will probably exhaust the reaources of the Bunter Sandstone locally. The anticipated output is a further 6 m. g. d. giving a total of 22.6 m. g. d. from all existing and planned sources. This will provide for the anticipated demand based on current trends, up to just beyond 1981. Some investment in local storage facilities will be needed in the mid 1970's to cope with daily peak demands.

72. In the mid 1970'a further suppliea may become available from the Yorkshire Derwent scheme. Another possibility under investigation by the Board is the underground water in the Magnesian Limestone belt. This is tapped elsewhere hy other undertakings and local samples suggest that the water is of good organic quality and in some cases not so hard that it could not be made potable by treatment.

73. It ia likely, then, that in about 10 years time the area will become partly dependent upon supplies of water from other parts of the country. The planning of the water resources of England and Wales is the responsibility of the Water Resources Bosrd, sn sdvisory and co-ordinating body which is currently csrrying out a series of regionsl studies of water demands and resources. Working in conjunction with the Water Resources Board are the two river authorities covering the area of the Doncaster and District Joint Water Board - the Trent River Authority (which covers the msin local supply from boreholes in the Bunter Sandstone) and the Yorkshire Ouse and Hull River Authority.

74. Preliminary results of the northern regional study (with which the Yorkshire Ouse and Hull River Authority is associated) indicate that provision could be made to meet local requirements to the end of the century from northern sources. The Wales and Midlands regional study has not yet been completed, but the Trent River Authority is

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investigating the possible use of water from the River Trent and its tributaries. This source is at present only fit for industrial use. Improvement of the quality of water in the Trent would make available an alternative source of potable water for Doncaster.

75. The study area is therefore well placed to receive water supplies from either the north or the south in the longer term and in the medium term the Yorkshire Derwent scheme could supply the needs arising from any expansion in the study area.

76. The extra supplies of water (whether from outside the area or from the Magnesian Limestone) will be more costly than water from existing sources and whilst for many years the more expensive water would be a small proportion of the total supply it is inevitable that the cost to the consumer will rise. This would be a serious prospect but for the fact that the Doncaster Water Board is one of the lowest cost suppliers of water in England and Wales. Detailed costings produced in 1966/67 by the Institute of Municipal Treasurers and Accountants covering 160 of the 273 water undertakings in England and Wales showed that only 26 produced water at a cost lower than that of the Doncaster Board, and only fifteen sold their water cheaper (at meter prices).

77. Table 3.5 shows a comparison of meter charges for water for a representative selection of water undertakings in the Yorkshire and Humberside region. Such comparisons are complicated by variations in the relationship between charges for domestic and metered consumption from one undertaking to another. But from the industrialist's point of view, supplies of water are cheap in Doncaster. This advantage is offset to some extent by the extra costs incurred by the necessity to pump sewage because of the flatness of the area. In a typical case, an industrialist in Doncaster C.B. pays 5d. per thousand gallons for pumping; but even if all this sum is regarded as an extra cost not usually incurred by industrialists in other areas, the overall position remains generally favourable to Doncaster.

TABLE 3.5: METER CHARGES FOR WATER

Undertaking	Meter Charge per 1,000 gallons	Index (Doncaster=100)
	s. d.	
N. E. Lincolnsbire	1 7	66
Kingston-upon-Hull	2 4	97
Doncaster	2 5	100
Mid-Calder	3 -	124
Leeds	3 3	135
Huddersfield	3 5	141
Sheffield	4 -	166

78. The study area is therefore a low-cost area for metered (industrial) water although this advantage may gradually diminish in future as it becomes necessary to use higher cost sources of supply to meet increasing demands. The phasing of the provision of new supplies will become increasingly important as and when new development takes place. Given the normal procedures for water supply planning there is unlikely to be any great problem in catering for any expansion in the study area.

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SURFACE MINERALS

79. Two major geological features of the study area provide useful resources of minerals for building materials and other uses. First, the Magnesian Limestones which outcrop in the west of the study area yield rock with uses which vary according to the chemical and physical properties of the different strata. Secondly, the eastern and southern parts of the study area are overlaid by deposits which yield sand and gravel of varying types. These are shown in Fig. 6 which also shows resources of brick-clay and peat.

LIMESTONE

80. The proved resources of limestone in this area are of considerable importance and the area will continue as a major source of production for many years. The pure dolomite which only rarely occurs in the Magnesian Limestone beds is found in the study area around Cadeby. It is used as a refractory and as a flux in the steel industry at Sheffield, Rotherham and Scunthorpe. It is also suitable for supply to the local glass industry, where constant quality, high magnesium content limestone is used to make bottle glasses. Limestone is also quarried around Stainton, where a considerable amount of a particularly hard, consistent and thick bed of rock is crushed and processed for use as roadstone, aggregate and for concrete products.

SAND AND GRAVEL

81. In Great Britain during the period 1938-1966 the production of sand and gravel increased from 22 million tons to 102 million tons a year. This increase in production followed the growth of the construction industry, and developments in methods of building and road construction. With the great increase in the use of reinforced concrete for building construction and of coated and uncoated aggregate in road pavement design the increase in demand has been concentrated in the bulk aggregates derived from sand and gravel. The rate of increase of demand has so far shown no sign of levelling off.

82. Sand and gravel occur over extensive areas of the eastern part of the study area between Bawtry and Stainforth in a belt about five miles wide (see also Chapter 8). They consist of thin deposits of sands, and sand and gravel, which are usually about six to eight feet thick and covered by up to 15 feet of overburden. To the south-east of the River Torne the gravels consist largely of quartzite pebbles and it is these gravels which are most in demand as their physical properties are superior to those of the sandstone and limestone gravels found to the north-west of the Torne. The crushing strength of the quartzite gravels is consistently high, making them suitable for the highest grades of concrete production.

83. In recent years the gravel fields of the south-east of England have been rapidly worked, whilst other areas have been sterilised by development. This has led to the latest estimated life for the usable sand and gravel production areas immediately adjacent to London being about five years, or twelve years if usable reserves within the remainder of the south-east are worked. However, the situation in one area will

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FIG. 6

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affect the other, and no precise dates for exhaustion can be given. To secure long term reserves, the industry will be forced to look further afield, probably into the West Midland and Trent Valley deposits, with very heavy increases in costs. Doncaster, on the other hand, will have available local supplies for many years to come. At recent rates of consumption (increasing by 8-10% per annum), it is estimated that proven reserves available for working will last until the late 1970's or early 1980's. These are reserves in respect of which planning permission for extraction has already been given, or would normally be given in accordance with allocations in development plans. Other deposits which are likely to be economic and are owned by the industry should last until the mid-1990's with final exhaustion of the deposits towards the end of the century.

84. Consumption of sand and gravel could well increase at an even faster rate, and these deposits are therefore an important resource for the study area. Their economic significance derives from the fact that transport costs are very heavy in relation to the basic cost of sand and gravel. Table 3.6, which is based on typical prices charged in the south of the region, shows that the ex-works cost of sand is doubled by a haul of 30 miles while gravel prices are increased by two-thirds. On the other hand the use of larger and more economic vehicles together with the development of the motorway network is tending to lower transport costs. Another factor reducing the locational advantage of proximity to sand and gravel resources is the possibility of substituting other materials or alternative methods in areas which are remote from supplies. Nevertheless, transport costs are so important that the presence in the study area of rich and extensive deposits of sand and gravel undoubtedly represents a resource of considerable local significance. This is in addition to the importance which must be accorded to any major deposit of a mineral for which there is such a large and increasing national demand.

TABLE 3.6: TRANSPORT COSTS OF SAND AND GRAVEL

Material	Indices (ex-works price = 100)		
	10 miles radius	20 miles radius	30 miles radius
Sand	150	175	200
Gravel	133	150	166

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SUMMARY

(i) Energy costs in the stndy area are relatively lower than in msny otber parts of the country, particularly in respect of coal and gas. Electricity costs are also lower, although the full benefit of close proximity to power stations is not reflected in the local price. For heavy fuel oil, the area is less favourably placed.

(ii) Doncaster is a low-cost area for metered (industrisl) water. Although additional supplies from more expensive sources will prohably be required in future, the srea should retain a significant advantage compared with other areas.

(iii) The presence in tbe study area of limestone and a rich ssnd and gravel field represents a resource of significsnce to the study area hecause of the importance of transport costs in relation to the ex-works price.

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4. HUMAN RESOURCES

POPULATION CHANGES

POPULATION TRENDS, 1951-68

85. In 1968 the population of the study area was some 246,000, representing 5.1% of the population of the Yorkshire and Humberside region. In the seventeen years since 1951 the population of the area had risen by 20%, about three times the regional rate and double that of Great Britain. Table 4.1 gives details of these changes, breaking them down into natural change (by births and deaths) and the net balance (mainly migration). Further details will be found in Appendix B.

86. The high rate of increase is due mainly to a very large excess of births over deaths which ran at nearly twice the national and regional rates and accounted for 34,400 of the total increase of 41,000 people. This reflects a high proportion of the population in the younger adult age groups, but even when allowance is made for this factor, the local birth rate is consistently higher than in the region or the country as a whole.

TABLE 4.1: HOME POPULATION: CHANGES 1951-68

Area	Home Population 1951	Estimated Changes 1951-68				Home Population 1968
		Total		By births and deaths	Net Balance (mainly migration)	
		No.	%	%	%	
Great Britain	48.92m	4.86m	10.0	9.5	0.5	53.78m
Yorkshire and Humberside	4.49m	0.28m	6.3	8.6	- 2.3	4.80m*
Study Area	205,250	41,050	20.0	16.8	3.2	246,300
Doncaster C.B.	81,610	2,640	3.2	9.9	- 6.7	84,250
Adwick-le-Street U.D.	18,650	100	0.5	11.7	- 11.2	18,750
Bentley with Arksey U.D.	19,750	4,110	20.8	18.9	1.9	23,860
Doncaster R.D.	53,000	26,670	50.3	24.6	25.8	79,670
Thorne R.D.	32,240	7,530	23.4	22.9	0.5	39,770

* As a result of boundary extensions in 1967, the home population was inflated by about 33,000 persons. Consequently the total change figure does not equal the difference between the two end dates.

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87. Moat of the remaining increase of 6,600 people can be attributed to an excess of civilians moving into the area over those leaving, while a amall proportion also resulta from changes in the armed services. Between 1956 and 1962 there was a marked inward movement of people; after 1962 thia movement fell away, and in the last three years (1965-68) more people have left the area than have come into it.

88. For individual local authority areas, changea by migration have varied conaiderably, but these undoubtedly reflect mainly internal movements within the study area. Net loases from Doncaster C.B. and Adwick-le-Street U.D. contrast with the very considerable gains in Doncaster R.D.

89. It is posaible to give a broad indication of the kind of people who have been moving into and out of the area by examining information on their age, sex and socio-economic status. Between 1951 and 1961 there was a considerable net movement into the area of men who were between 15 and 24 years of age in 1951, which can be partly but not wholly accounted for by the releaae of men from the armed forces. In the same period there was also a net inward movement of men aged 25-34 and women aged 15-34, but a tendency towards outward movement in other age groups, particularly old people. In the 1961 to 1966 period there was a net balance of inward movement in the younger age groups, but a net outward movement of older people was still noticeable (see Table 4.2(a)).

TABLE 4.2: ASPECTS OF MIGRATION INTO AND OUT OF THE STUDY AREA, 1961-66

	Inwards	Outwarda	Balance
(a) By age groups (in 1966)			
5-14	7,040	5,790	+ 1,250
15-44	21,000	19,910	+ 1,090
45-59/64	3,700	4,270	- 570
60/65 and over	1,420	1,970	- 550
(b) Economically active migrants by socio-economic groups			
Professional etc., Employers, Managers and non-manual workers	6,580	7,730	- 1,150
Foremen, skilled etc.	4,720	4,430	+ 290
Other manual workers etc.	5,330	4,770	+ 560
(c) By region of origin or deatination			
Scotland	2,220	620	+ 1,600
Northern	2,760	730	+ 2,030
East Midlands, North West and reat of Yorkshire and Humberside	10,460	11,880	- 1,420
Remainder	5,950	6,610	- 660
Abroad	1,880	Not known	Not known

Note: See also Appendix A.

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90. Table 4.2(b) shows a clear pattern of a net loss of people in the professional, managerial and non-manual 'socio-economic' groups, and a net gain of manual workers in the 1961-66 period. An analysis of the occupations of these people shows that the main feature was a balance of inward movement of miners and an outward balance of people in office jobs. This picture is reinforced by the industrial analysis.

91. From the 1966 Census it is also possible to indicate the regions of origin or destination of people who have moved between 1961 and 1966. Table 4.2(c) shows that there were considerable net gains of people from Scotland and the Northern region and a net loss to the remainder of Yorkshire and Humberside and adjacent regions.

92. The main elements of the migration pattern in the period 1961-66 therefore appear to have been:-

(a) an excess of inward over outward movement of people in the younger age groups, the inward movement consisting particularly of miners and their dependants from Scotland and the north of England;

(b) an outward movement of non-manual workers, mainly to the remainder of the Yorkshire and Humberside region or to adjacent regions. While such people would often have been young, there was a tendency to outward movement in the age groups over 45, including those of retirement age.

93. The pattern of population change by both natural increase and migration has had the effect of maintaining a high proportion of the younger age groups in the population. Table 4.3 shows that in 1951 the age structure was decidedly young in character, with 62% of the population under 40, compared with a national proportion of 57½%. In the fifteen years to 1966 this differential increased slightly, although in both the study area and the country as a whole the increase in longevity has brought about a higher proportion of old people in the population. Figure 7 shows the 1966 age and sex structure in more detail.

TABLE 4.3: PROPORTION OF THE TOTAL POPULATION UNDER THE AGE OF 40

	1951		1961		1966	
	% under 40	Index (G.B. = 100)	% under 40	Index (G.B. = 100)	% under 40	Index (G.B. = 100)
Study Area	61.9	108	61.1	109	61.1	109
Yorkshire/Humberside	57.4	100	56.0	100	56.0	100
Great Britain	57.5	100	56.2	100	56.0	100

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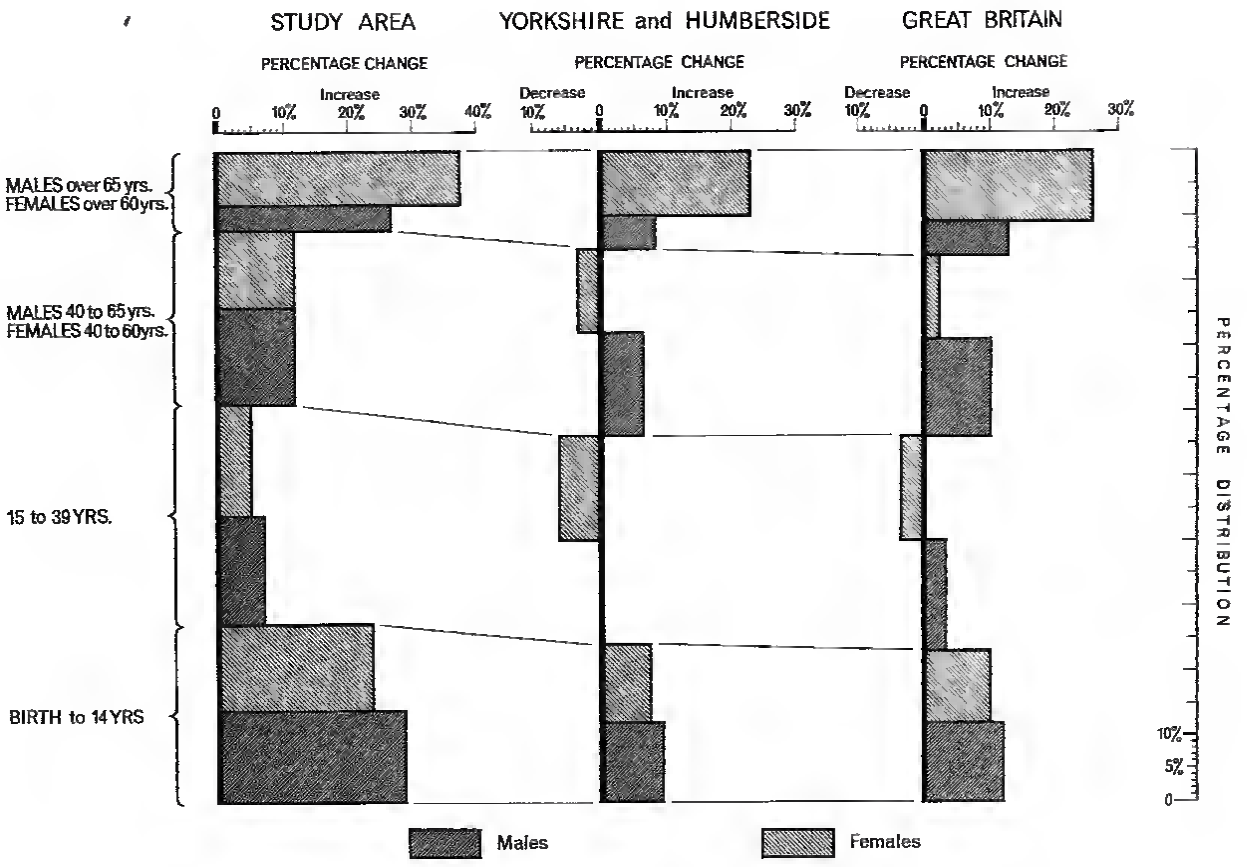

Fig. 7 AGE/SEX STRUCTURE 1966 and PERCENTAGE CHANGE 1951–1966

The length of the bars indicates the rate of change during the period 1951-66 and the depth of the bars is proportional to the numbers in each age group in 1966. The total change is thus approximately represented by the area of the bars.

FUTURE POPULATION OF THE STUDY AREA

94. The high proportion of young people in the population has important implications for the future of the study area. In order to demonstrate this, we have estimated the natural increase that is likely to accrue in the period under review, i.e. in some detail until 1971 and 1981 and the broad picture to the year 2,000. No account has been taken of the possible effects of migration.

95. The projection of natural increase is based on age structures derived from the 1961 and 1966 censuses and takes account of trends in fertility rates, age of marriage, family size, the impact of medical science on the expectation of life and other relevant influences. If, however, the recent national decline in the birth rate projections is reflected in the study area, then the estimates may well be optimistic.

96. The results of this exercise show that the population should grow from 246,000 in 1968 to some 257,000 in 1971 and increase by a further 28,000 in the next decade to a total of about 285,000 persons in 1981, an increase of 16% on the 1968 population. As a very broad indication of the further potential growth in the remaining years of the century, we have made estimates based on the latest national projections of a rise in population in the period 1967-2000 of about 13.8 millions. The results, which are clearly subject to many reservations, suggest a further increase in the period 1981-2000 of 77,000, giving a potential total population of about 362,000 by the end of the century.

LABOUR SUPPLY

NUMBERS AVAILABLE FOR EMPLOYMENT

97. Estimates have been made of the effective supply of labour to 1975, based on estimates of the population over fifteen with deductions made in respect of the unemployed and inactive (see Table 4.4 and Appendix B). The years used for these estimates differ from those used earlier in this chapter because of the need to relate them to those of the demand for labour in Chapter 5. The results show that the effective supply of male labour is expected to remain steady at 71-72,000 and the supply of female labour to increase in the years to 1971 by about 4,000 to a level of 34-35,000 with a smaller increase thereafter. This picture contrasts markedly with the rapid increase in total population, most of which is the result of growth in the numbers under 15 and over the age of retirement.

TABLE 4.4: ESTIMATES OF EFFECTIVE SUPPLY OF LABOUR

Thousands

Year	Males	Females	Total
1959	70.9	24.9	95.8
1963	70.8	26.8	97.6
1966	71.1	30.4	101.5
1971	71-72	34-35	105-107
1975	71-72	36-37	107-109

For source and notes, see Appendix E.

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98. It can fairly be said that these supplies of labour can be drawn upon by employers in Doncaster. Indeed the study area was delimited in such a way that it approximates to a self-contained labour catchment area (see para. 12). A detailed picture of the pattern of journeya between home and workplace in 1966 is shown in Figure 8. It will be seen that the movement within the study area is very considerable and is dominated by Doncaster itself. Except for the county borough, at least 30% of the economically active male population of each of the constituent local authority areas worked elsewhere within the study area; percentages for females were even higher[9], except in the cases of Doncaster C.B. and Thorne R.D. Movement across the boundary of the atudy area is mainly inwards from the Dearne Valley area and is on a comparatively small scale. An examination of the statistics for 1951, 1961 and 1966 shows that the pattern of journeys has not altered significantly since 1951, but that the volume of movement has increased considerably.

99. The labour catchments of points outside Doncaster are different, and because of the important implications for industrial location, we have calculated the total populations within a reasonable travelling distance of aelected points. The results are given in Chapter 8 (paras. 245 & 246) and ahow that the labour catchments are proportionately larger for points in the west of the study area than in the east. These calculations are based on car journeys: on a public transport basis, points other than the centre of Doncaster have very much smaller labour catchmenta although there would probably again be a similar contrast between west and east.

TYPES OF LABOUR AVAILABLE

100. In order to aaaess the typea of labour available in the study area at present, we have examined the following:-

(a) age structure of the labour force

(b) socio-economic factors

(c) training.

AGE STRUCTURE OF THE LABOUR FORCE

101. Table 4.5 compares the age structure of the local labour force with that of the region and of Great Britain and shows that for both men and women, the younger age groups (i.e. under 45) accounted for a larger proportion of the labour force locally. The study area has correspondingly fewer people in the older age groups. Coupled with the picture of recent net inward migration of people in the younger age groups this suggests that the local labour force is comparatively youthful and therefore generally more adaptable.

9. In interpreting this, it should be borne in mind that female activity rates are low in the study area (see Chapter 5).

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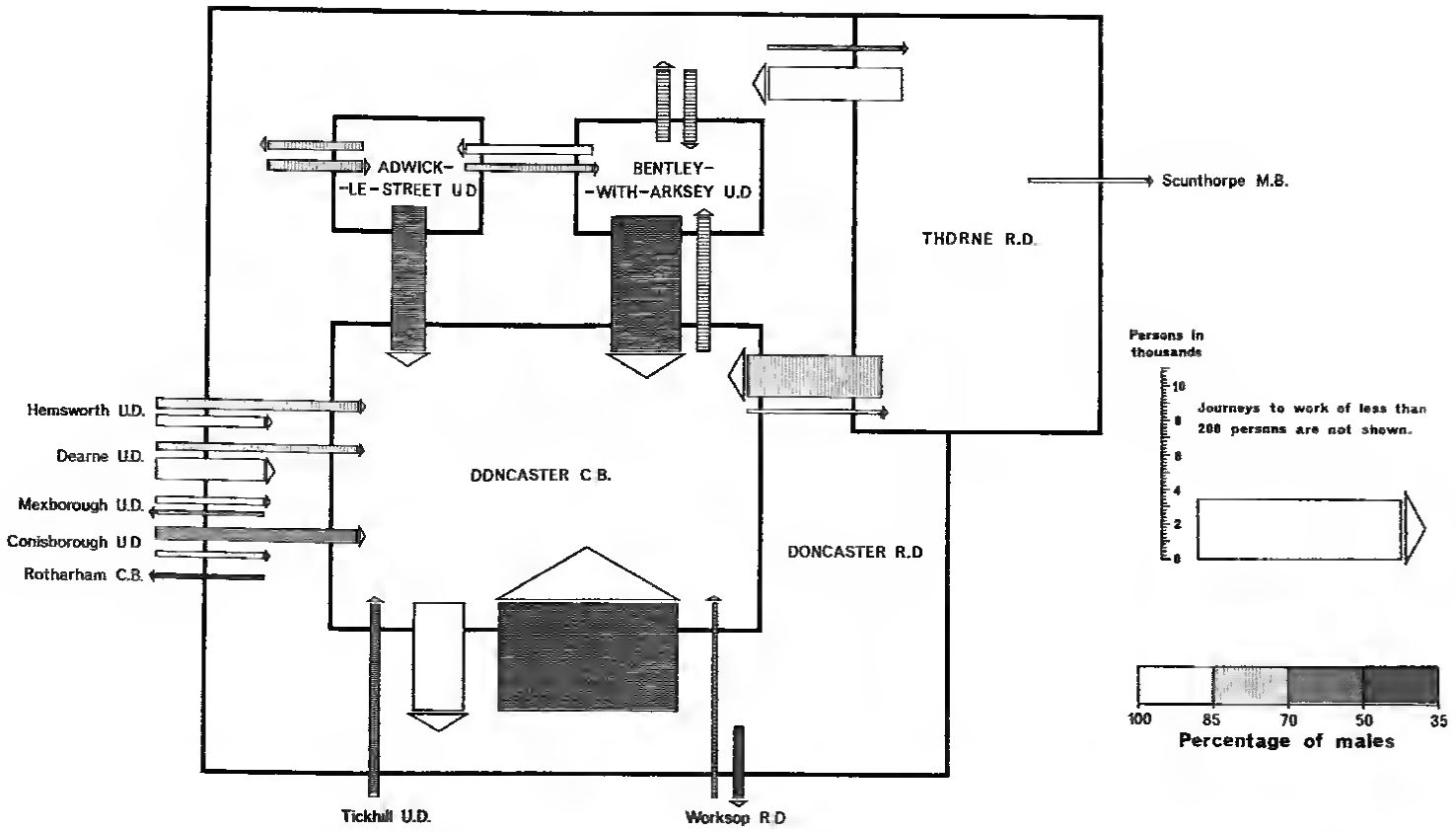

Fig. 8. JOURNEY TO WORK 1966

The arrows represent the journeys to work made to and from each local authority in the study area. The widths of the arrows are proportionate to the total number ot people involved, and the hatching represents the percentage ot males to the total.

TABLE 4.5: AGE STRUCTURE OF THE ECONOMICALLY ACTIVE POPULATION 1966

Percentage

Age Group	Study Area	Yorkshire and Humberside	Great Britain
Males			
15 - 24	20	19	19
25 - 44	43	40	40
45 - 64	35	38	37
65+	2	3	4
Total	100	100	100
Females			
15 - 24	34	28	27
25 - 44	37	35	35
45 - 64	28	35	35
65+	1	2	3
Total	100	100	100

102. Detailed information is available about the number of boys and girls reaching school leaving age each year (see Table 4.6). In the period 1963-67 numbers have declined somewhat but estimates for the years 1968-71 suggest that by 1971, the annual number will rise again to about 4,000 boys and girls, similar to the total in 1963. In relation to total male employment, the local proportion of boys reaching school leaving age (col. 2) is generally rather higher than the national (col. 3). The corresponding information for girls (cols. 5 and 6) shows that the local proportion is very much higher than the national, due no doubt to the low female activity rate in the study area.

TABLE 4.6: BOYS AND GIRLS REACHING SCHOOL LEAVING AGE 1963-7, AND ESTIMATES, 1968-71

Year	Boys			Girls		
	Number	Proportion of total male employees - index (G.B. 1967 = 100)		Number	Proportion of total female employees - index (G.B. 1967 = 100)	
		Study Area	G.B.		Study Area	G.B.
	(1)	(2)	(3)	(4)	(5)	(6)
1963	2,030	113	115	1,980	179	120
64	2,100	118	108	2,000	175	110
65	1,910	109	102	1,840	158	104
66	1,910	107	100	1,710	141	99
67	1,840	105	100	1,760	135	100
Estimates:-						
1968	1,770	101	101	1,730	132	101
69	1,790	102	101	1,750	134	100
70	1,810	103	100	1,760	135	99
71	2,030	115	104	1,960	150	104

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103. The proportion of boys and girls entering employment directly from school is falling nationally and locally. If this trend continues in the study area it will to a large extent offset the expected rise in the numbers of boys and girls reaching school leaving age in the period to 1971. But in relation to the country as a whole, the study area is likely to continue to have a high proportion of young persons entering the labour force.

SOCIO-ECONOMIC FACTORS

104. The Census classifies the male economically active population into a number of socio-economic groups which give an indication of the broad occupational and social characteristics of the male labour force. Table 4.7 gives the data for 1966. The main feature is the small proportions in the managerial and professional groups in comparison with the region and (particularly) England and Wales. A similar pattern is found in the case of non-manual workers. Conversely, the other groups, mainly skilled and semi-skilled manual workers, are better represented in the study area. It should be noted that there are comparatively few unskilled manual workers in the study area.

TABLE 4.7: SOCIO-ECONOMIC GROUPS OF THE MALE ECONOMICALLY ACTIVE POPULATION, 1966

	Numbers in each group per '000 occupied male population		
	Study Area	Yorkshire and Humberside	England and Wales
Managerial, Professional	90	129	152
Foremen, skilled manual and own account workers (other than professional)	415	415	383
Non-Manual Workers	123	142	170
Personal service, semi-skilled manual and agricultural workers	265	205	178
Unskilled manual workers	70	89	83
Armed forces and inadequately described occupations	37	21	36
TOTAL	1,000	1,000	1,000

Note: because of rounding the columns do not necessarily add up to 1,000.

105. A rather general indicator of the educational level of the labour force is provided by the 1961 Census data of age on completion of full time education (see Table 4.8 and Appendix B). If the proportion of the adult population whose education terminated at the age of 17 or later is taken as a measurement, the study area has a poor record, significantly below even the regional proportions for men and women, which are themselves very low in relation to the national average.

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TABLE 4.8: TERMINAL EDUCATION AGE 1961. PROPORTION OF ADULT POPULATION (AGE 25 AND OVER) WHO COMPLETED THEIR FULL-TIME EDUCATION AT AGE 17 OR LATER

Area	%	
	Males	Females
Study Area	4.8	4.6
Yorkshire and Humberside	6.2	5.6
England and Wales	9.2	8.8

TRAINING

106. The previous measurement covers the whole labour force aged 25 and over in 1961. In order to obtain an assessment of the educational level attained by young people in recent years we have examined the proportion of pupils remaining at school after the age of 15. Table 4.9 compares data for Doncaster C.B. with regional and national data for the years 1962 - 1966 inclusive. In order to even out variations from year to year a three year moving average has been calculated. The results show that the proportion of children remaining at school beyond the statutory leaving age was

TABLE 4.9: PUPILS REMAINING AT SCHOOL AFTER THE AGE OF 15

(a) Pupils remaining at school until the age of 16 as a percentage of those aged 13 three years earlier.

Year	Doncaster C.B.		Yorkshire and Humberside (Three year moving average)	England and Wales (Three year moving average)
	Annual total	Three Year moving average		
1962	21.6	-	-	-
1963	21.8	22.1	19.6	21.2
1964	23.1	22.7	21.5	22.6
1965	23.2	24.8	22.3	24.0
1966	28.0	26.9	23.6	25.9
1967	29.4	-	-	-

(b) Pupils remaining at school until the age of 17 as a percentage of those aged 13 four years earlier.

1962	13.3	-	-	-
1963	13.4	13.4	10.4	11.0
1964	13.6	13.8	11.4	11.6
1965	14.4	13.6	12.3	12.5
1966	12.8	14.6	13.0	13.5
1967	16.7	-	-	-

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rather higher than regionally and nationally so that on this criterion the level of education of the young people in Doncaster is likely to be comparatively better overall. Unfortunately, comparable data for the study area outside Doncaster C.B. were not available. But a comment on conditions in the rest of the study area is provided by the evidence which the West Riding Education Authority gave to the Robbins Committee in 1961. It was argued that because of the social structure of the area generally, the schools in the coalfield area have an additional burden of making up for deficiencies in the pupils' home environment.[10] The problem is, of course, a national one but made more acute locally by the social structure.

107. Neither the data on terminal education age nor those of staying on at school take account of training and qualifications received through apprenticeship and industrial training schemes of which there are a considerable number in the study area. Training facilities in the area's main industries of coalmining, railways and engineering are excellent. Outside these industries, opportunities for skilled training are limited although opportunities for clerical work are less restricted. There is a shortage of opportunities for young people to train at the semi-skilled level. The situation is illustrated by the types of employment taken up by young people (see Table 4.10).

108. Table 4.10 (Section A) shows that the proportion of boys entering apprenticeships is higher in the study area than nationally although it should be noted that all new entrants to coalmining are classified as apprentices. The proportions of boys entering professional and clerical jobs are close to the national and regional averages, but there is a marked deficiency in other employment with at least 8 weeks training.

109. In 1967, 60% of girl entrants took up jobs which involved little or no training compared with a national proportion of 38%. Section B of Table 4.10 shows that the main deficiencies were in clerical jobs (26% compared with 39% nationally) and, as with boys, in other employment with at least 8 weeks' training.

TABLE 4.10: YOUNG PERSONS ENTERING EMPLOYMENT (MAIN CATEGORIES) 1966 and 1967.

percentages

Category of Employment	1966			1967		
	Study Area	Yorkshire and Humberside	Great Britain	Study Area	Yorkshire and Humberside	Great Britain
A: BOYS						
Apprenticeships	51	51	42	58	52	43
Professional training	1	1	1	1	1	1
Clerical	8	9	9	7	8	9
Other employment with at least 8 weeks' training	2	11	13	2	9	13
All other employment	39	28	34	33	29	34
B: GIRLS						
Apprenticeships	5	6	7	5	7	7
Professional training	4	3	2	5	3	2
Clerical	26	35	40	26	35	39
Other employment with at least 8 weeks' training	6	14	14	4	14	14
All other employment	59	41	38	60	41	38

Note: Figures do not necessarily add up to 100 because of rounding.

10. Committee on Higher Education, Evidence, Part I, Volume A - Command 2154 - VI - H.M.S.O. 1961. The problem is also illustrated in "Half our Future" (The Newsom Report) H.M.S.O. 1963.

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SUMMARY

(i) The population of the study area has a very high rate of natural increase, and this has been the main component of the rapid growth of total population in recent years.

(ii) Up to 1962, there was a net gain of population by migration, but this bas since fallen away and a net loss occurred in the period 1965-67.

(iii) In the period 1961-66 the net effect of migration has been a tendency to gain miners, people in the younger age groups and people formerly living in Scotland and the north of England; and to lose non-manual workers.

(iv) A high proportion of the population is in the younger age groups and it is expected that a high rate of natural increase will continue. Broad estimates of the likely growth of population by natural increase are:

1971	257,000
1981	285,000
2001	362,000

(v) In the years to 1975 the effective supply of male labour should remain fairly steady: the supply of female labour is expected to increase by about 4,000 to 1971 and continue to increaae (although less rapidly) thereafter.

(vi) The age structure of the working population is comparatively young. Although the annual total of boys and girls reaching school leaving age has declined somewhat since 1963, it is expected to riae again in the period to 1971.

(vii) There is a comparative lack of male managerial, professional and other non-manual workers and an above-average proportion of manual workers. In 1961 a very low proportion of men and women had received full-time education beyond the age of 17.

(viii) In recent years, however, the proportion of people in Doncaster C.B. remaining at school to the ages of 16 and 17 has been above average.

(ix) There are excellent facilities for skilled training in coalmining, railways and engineering. There is a deficiency, however, in jobs for young people with training to semi-skilled level.

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5. INDUSTRY AND EMPLOYMENT

110. This chapter examines the industries of the study area and the local employment situation with particular reference to recent changes and prospects for the future. In addition to official employment statistics, information about the coalmining industry was given by the National Coal Board and a special survey of manufacturing firms provided an important source of information. Replies were received from 51 firms, accounting for 87% of manufacturing employment in the study area. Details of this survey will be found in Appendix C.

INDUSTRY IN THE STUDY AREA

EMPLOYMENT STRUCTURE

111. The main feature of industry in the study area is the great importance of coal mining, accounting in 1967 for 20,800 of the 22,500 employees in the primary industries and 28% of all male employees in the study area. Whereas nationally and regionally the primary industries represented only 4% and 7% respectively of total employment, they accounted for 22% of the study area's employees (see Table 5.1). Consequently the proportions in the remaining sectors (with the exception of construction) were low. Manufacturing accounted for only 30% of employees, well below the regional level (43%) although the difference with Great Britain (38%) was less. The proportion of employment in the services sector was 39% compared with the national level of 51% and the regional level of 43% (but these proportions are not strictly comparable - see footnote 3 to Table 5.1). Apart from Doncaster's function as an important railway centre, service employment in the study area is almost wholly devoted to serving the needs of local industry and population. The local economy is therefore based on the primary and manufacturing sectors. The proportion of employees engaged in the construction industry in 1967 was a little higher than nationally or regionally. It covered a broad range of building and civil engineering activity mainly in small firms but included one medium sized firm engaged in civil and mining engineering.

112. Another consequence of the relative importance of coal mining is the emphasis on male employment. Overall there were only 45 female employees to every 100 male employees in 1967 compared with a ratio of 58 females to every 100 males in Great Britain. Table 5.2 shows the extent to which the high proportion of males in primary industries affects the proportions in manufacturing and services. On the female side the service industries provide two-thirds of all jobs and manufacturing is less important than either regionally or nationally.

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TABLE 5. 1: EMPLOYEES BY INDUSTRY IN 1967 AND COMPARISON WITH YORKSHIRE AND HUMBERSIDE AND GREAT BRITAIN

Order	Industry	Total Employees			Percentage of Total Employees		
		Males	Females	Total	Study Area	Y. & H.	G.B.
I & II	Primary Industries: Sub-total (including Coalmining)	21,300 (19,900)	1,200 (1,000)	22,500 (20,800)	22 (21)	7 (5)	4 (2)
VI	Engineering and Electrical Goods	2,800	1,600	4,400	4	8	10
VIII	Vehicles	6,400	400	6,800	7	2	4
IX	Metal Goods not elsewhere specified	3,000	1,200	4,300	4	3	2
X	Textiles	3,200	600	3,700	4	8	3
XIII	Bricks, Pottery, Glass, Cement etc.	2,800	1,400	4,200	4	2	2
etc.	All other Manufacturing Industries	3,900	3,200	7,200	7	19	17
III-XVI	Manufacturing: Sub-total	22,200	8,400	30,500	30	43	38
XVII	Construction: Sub-total	8,200	500	8,700	9	7	7
XIX	Transport and Communications	4,900	1,000	5,900	6	6	7
XX	Distributive Trades	3,500	6,200	9,700	10	11	12
XXII	Professional and Scientific Services	2,300	7,100	9,400	9	10	11
XXIII	Miscellaneous Services	2,700	5,200	7,900	8	7	9
XXIV	Public Administration	2,200	1,100	3,300	3	5	6
etc.	All other service industries	2,200	500	2,700	3	4	5
XVIII-XXIV	Service Industries: Sub-total	17,700	21,100	38,900	39	43	51
	GRAND TOTAL	69,600	31,300	100,900	100	100	100

Notes: 1. Industries with less than 2,500 employees are not shown separately.

2. Figures are rounded to the nearest hundred and percentages to the nearest whole number; they do not therefore add up in all cases to the totals shown.

3. Figures for the study area could not be prepared on quite the same basis as the national and regional estimates and so are not strictly comparable. In particular no adjustment has been made to the study area figures for unlocated workers - those whose National Insurance cards are held away from their area of employment. As a high proportion of such workers are in the service industries the proportion of workers in this group in the study area is somewhat under-estimated (see Appendix O).

TABLE 5. 2: MALE AND FEMALE EMPLOYEES, 1967

Industry	Percentage of Employees					
	Males			Females		
	Study Area	Y. & H.	G.B.	Study Area	Y. & H.	G.B.
Primary	31	11	6	4	1	1
Manufacturing	32	45	41	27	39	32
Construction	12	10	10	2	1	1
Services	25	34	42	67	59	65
TOTAL	100	100	100	100	100	100

Note: Percentages are rounded to the nearest whole number.

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113. The coal mines, which provide the greater part of the primary employment, are located outside Doncaster C.B. Manufacturing industry, on the other hand, is strongly concentrated in Doncaster and immediately adjoining areas, the only sizeable exceptions being two factories at Harworth, one at Askern and one at Thorne. Service employment also tends to be concentrated in Doncaster.

COAL MINING

114. Details of the ten collieries in the Employment Exchange areas constituting the study area are given in Table 5.3 and their locations are shown in Figure 3. Their total production in 1968 was 7.3 million tons of bituminous coals suitable for a wide variety of markets. The main consumer of local coal is the electricity generating industry, which presently takes about a third of the output, and this market is increasing rapidly. About 600,000 tons of coking coal per annum are supplied to the steel industry at Scunthorpe. Latest figures (calendar year 1968) show that output per manshift for the whole of the Doncaster Area of the National Coal Board was 48.3 cwts. compared with an average of 45.5 cwts. for the four areas of the Yorkshire Coalfield and a national average of 41.7 cwts.; the productivity increases compared with 1967 were 16.6% for the Doncaster Area, 12.3% for Yorkshire and 9.2% nationally (see also Appendix D Table D1). These figures reflect the fact that these are comparatively modern collieries, large in size and with a high level of investment in equipment. Most of the pits are regarded as "long life" collieries. Thorne Colliery was closed in 1956 because of difficulties with water percolating the shaft walls. Repair work was completed in 1965 but the colliery has not been re-opened although the coal preparation plant was for a time in operation preparing coal brought from other collieries. There is a possibility that the colliery will re-open on modern highly productive lines in the mid-1970s. Harworth Colliery is currently "in jeopardy", i.e. it will continue in operation only if satisfactory economic levels of production and sales are achieved and maintained.

TABLE 5.3: COLLIERIES IN THE STUDY AREA

Colliery	Number employed, December 1968	Output, 1968 (thousand tons)
N.C.B. Doncaster Area:-		
1. Askern Main	1,591	566
2. Bentley	1,403	744
3. Brodsworth (Woodlands) *	3,397	1,900
4. Bullcroft (Carcroft) *		
5. Hatfield (Stainforth)	2,057	830
6. Markham Main (Armthorpe)	1,827	804
7. Rossington	1,990	1,001
8. Yorkshire Main (Edlington)	1,998	904
9. Thorne, Moorends	61	-
N.C.B. North Nottinghamshire Area:-		
10. Harworth	1,350	545

*These two collieries are now combined into one production unit.

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115. Although most of those employed in the coal industry work at the collieries about 2,000 people are employed in offices in Doncaster. These offices consist of the Doncaster Area Headquarters of the National Coal Board, and certain sections of the national administrative organisation concerned with purchasing and stores, computer services, finance and production.

MANUFACTURING INDUSTRY

116. In 1967 manufacturing industry in the study area employed some 30,500 people in the production of a considerable diversity of goods. The principal orders of manufacturing industry represented are listed in Table 5.1; it will be noted that these are industries which in this area tend to employ a high proportion of males. The largest individusl industry was vehicle manufacture (6,800), chiefly concentrated in two large establishments, one engaged in the manufacture of agricultural tractors and implements and the other in the repair of railway locomotives, carriages and wagons. In engineering and electrical goods (4,400), although a good proportion were employed at two establishments, one of which is at Thorne making electric motors and electrical components, employment was more widely spread over a range of activities and firms, including tool-making and the manufacture of mining machinery and equipment. Employment in the remaining metal-using industry (metal goods not elsewhere specified (4,300)) was, as with vehicles, substantially dependent on two firms, one of brass founders and the other manufacturing wire ropes and cables.

117. The textile industry provided 4% (3,700) of the area's total employment, much of it in nylon spinning at one large establishment in Doncaster. There is also some textile employment at Thorne.

118. Three firms in the glass industry making plate glass, glass bulbs and containers accounted for 80% of the 4,200 employees in the bricks, pottery, glass and cement industry order. The remainder were in smaller firms, mainly in brick, tiled fireplace and concrete manufacturing.

119. The 7,200 employees in the remaining manufacturing industries covered a wide range of industries and smsll to medium sized firms. Over a quarter of the employees were in the food, drink and tobacco industries, baking and sugar confectionery being the major activities with smaller numbers in flour milling, brewing, milk products, poultry processing, preserves and soft drinks manufacture. A rather smaller proportion was in clothing and footwear. Many were employed in a factory of a multiple tailoring firm, but the manufacture of shoes, children's and ladies' clothing was also represented. Other manufacturing industries included wood machining and sawmilling, newspaper printing and publishing, iron founding, smokeless fuel manufacture (Askern) and boat building and repairing (Thorne).

120. Size of Establishment. An important feature of manufacturing in the study area is that in 1967 60% of msnufscturing employment was provided by eight large firms, whilst 83% was accounted for by the twenty one establishments with 250 or more employees. The significance of this feature is discussed in para. 137.

121. New Firms. The study area has at no time enjoyed the financial advantages of Development Aress or Development Districts. Nevertheless, an examination of the 102 largest manufacturing establishments, which together accounted for 95% of manufacturing employment at mid-1967, shows that 53 units established since 1945

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employed 9,820 persons out of a total of 28,950. The 53 units are analysed by date of establishment and numbers employed in Table 5.4

TABLE 5.4: ANALYSIS OF 53 MANUFACTURING UNITS ESTABLISHED SINCE 1945

Periods in which units were established	Number of Cases	Total Employed at:-		
		Mid-1960	Mid-1967	Mid-1968
1946-1953	28	3,797	4,630	4,819
1954-1959	9	4,334	4,194	3,957
1960-1968	16	60*	1,000	989
1946-1968	53	8,191	9,824	9,765

*Two units established in early 1960 account for this figure.

122. Among the 53 new establishments are some which started in premises vacated by other firms. For example, Doncaster's large manufacturer of nylon yarn took over, and expanded employment in, premises already in use for synthetic fibre production. The nine cases established in the period 1954-1959 employed more workers at mid-1960 than at 1967 or at 1968. This reflects a very substantial reduction in employment by a motor car manufacturer - a reduction which involved the closure of the firm's assembly unit in Doncaster, part of a reorganisation within the firm which also covered the establishment of a large factory in the Merseyside Development Area. The fall in employment at this firm's Doncaster unit was largely offset by increases in other new units which were established in the same period.

123. The eight years 1946-1953 saw the establishment of 28 units, the three largest being a glass factory at Harworth, an electrical goods factory at Thorne, and a clothing factory in Doncaster. The glass factory is one of three substantial employers in the glass industry in the study area. One of the glass firms has recently transferred to a completely new factory, but, as an old established firm, is not included in the 53 post 1945 establishments. The third glass firm has reduced employment in the area, following the invention of the revolutionary "float glass" process and subsequent concentration of production in Lancashire.

124. Of the 102 establishments forty-nine were there before 1946. At 1960 these employed a total of 18,965, compared with 19,190 at 1967, and 18,550 at 1968. This apparently static employment position conceals important changes within the group. For example, the number of workers producing tractors and agricultural equipment increased whilst a substantial reduction in the number employed in British Railways workshops was recorded.

125. Establishments known to have closed employed a total of 4,000 persons (the peak employment figures of these establishments). As we have seen, in some cases the premises were taken over by firms which subsequently expanded employment.

126. Linkages. The industrial survey provided some information about relationships between establishments in the area. Thirty-four firms (employing 15,000 workers)

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provided a breakdown, by area of origin, of supplies worth £32 million. Some 10.4% (by value) of the listed materials were purchased from within the study area. Imports provided 5.2% and about 84% came from home suppliers located outside the study area. Dependence on local supplies varied between industriea. For example the three firms in the chemicals group who replied to this question obtained 88% of their supplies from the local collieries and one of these firms bought half its needs of engineering parts locally. Similarly one large glass works uses locally produced dolomite. But the overall picture is one in which local linkages are of comparatively little importance.

127. Thirty-five firms employing 14,400 gave a breakdown by area of destination of sales worth £67 million. Only 2% were sold in the study area. 65% were sold on the home market. The remaining 33% were exported, including substantial quantities of tractors and agricultural machinery.

128. Technological Factors. Most manufacturing firms who contributed to the industrial survey were satisfied with the reaearch and development facilities and technical information services available, both nationally and locally. But many firms used services provided within their own organisations and so made little use of outside services. Nevertheless references were made to a wide variety of national and local bodies; Doncaster Technical College was mentioned by 10 of the 40 firms answering the relevant queation and the Doncaater Productivity Association was mentioned by seven firms. The proviaion of technical services in Doncaster is about average for a town of its size. With a few notable exceptions, little research and development work is actually done in Doncaater itself by firms based in the area or having branches here, and this tends to make the area vulnerable to rapid technological cbanges.

129. Locational Factors. An indication of the main ways in which industrialists have found Doncaster attractive is provided by the industrial survey. Firms were asked to set out the main advantages of location in the study area. The two advantages which appear to have been of moat significance to post-1945 units are good road communications and availability of labour. Nine firms indicated that good road communications give an advantage to Doncaster. Three firms found advantage in the Doncaster area's rail communications. Of 19 firms which mentioned labour, nine were thinking in terms of the availability of female labour and two were seeking both males and femalea. When all cases are taken together the atudy area's advantageous situation in relation to communications comes out even more strongly than is seen from an examination of post-1945 establishments. The results are shown in Table 5.5.

TABLE 5.5: ADVANTAGES OF LOCATION IN THE STUDY AREA

Groups of Advantegee	Number of firms quoting each advantage		
	Pre-1945	Post-1945	Total
Labour	9	19	28
of which eveilability of female labour	3	9	12
Communications	17	12	29
of which road	7	9	16
of which reil	6	3	9
of which air and cenal	4	-	4
Proximity to Markets	7	9	16
Links with the Coal Industry	5	6	11
of which eupplies of materiels end power	4	3	7
Proximity to Supplies (other than coal)	6	2	8
Other miecellaneous factors	8	16	24
Total firms responding	24	27	51

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130. The list of advantages and disadvantages mentioned by firms in their replies to the questionnaire cannot indicate accurately the weight of importance which should be attached to each locational consideration. For example the availability of female labour was sufficiently important to cause firms to locate new factories in the study area, but the same firms can, nevertheless, find some disadvantages on the labour side. In such cases the apparently contradictory "disadvantages" are really qualifications of stated advantages. Bearing in mind that the importance to be attached to the scale of disadvantages appears to be lower than the scale of importance attached to indicated advantages, it is useful to note that though many firms spoke of Doncaster's advantageous situation on the road network, a few drew attention to difficulties of east-west communications. Another disadvantage mentioned was the difficulty in recruiting suitably trained labour.

131. Sites and Buildings. The industrial survey showed that 46 firms accounting for 76% of manufacturing employees occupied sites totalling 1,220 acres of which 471 acres were available for expansion if required. This available land includes one large area, well sited in relation to the motorway pattern of the mid-1970s, on which there are empty premises available for industrial use. There are a number of modern factories, purpose built for the industry they house, many of them in the industrial area at Wheatley, Doncaster, developed in the post-war years. Other industries, however, are housed in old buildings, for example, railway workshops, most of them constructed about the turn of the century. Parts of the old railway workshops have been demolished, whilst other parts have been extensively modernised. Most of the old buildings in the study area have a sound fabric and are capable of some degree of modernisation, to give a useful life, in most cases, for many years to come. Such premises would probably be acceptable to new enterprises if they became available. Between the two extremes there is a middle range of premises, many of them built in the inter-war years but not all suitable for modern processes. Most factories in the area are single storey. In general, working conditions are good, although varying between the newer and the older premises. In respect of both general suitability and working conditions there is a marked contrast with, for instance, the multi-storey mills on cramped and often fragmented sites which characterise the industrial areas of the Pennine valleys. In the industrial survey the great majority of firms stated that they were satisfied with the adequacy of their buildings and sites.

132. The amount of new building and extensions exceeding 5,000 square feet completed in the period 1953-67 was nearly 2.4 million square feet (see Table 5.6). Measured against the total employment in manufacturing, the level of building exceeded the national average. The new buildings and extensions completed in the 14½ years were for a wide range of industries. Vehicles, metal goods, engineering and electrical goods, glass and textiles were all well represented in the figures.

TABLE 5.6: NEW BUILDINGS AND EXTENSIONS COMPLETED FOR MANUFACTURING INDUSTRIES

Area	Area of New Buildings and Extensions Completed 1.1.1953 to 30.6.1967 '000' Sq. Ft.	INDEX Ratio of area completed (in previous column) to total employees in manufacturing in 1966 G.B.=100
Study Area	2,393	108
Yorkshire and Humberside	57,699	94

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133. Although the stock of factories is of good quality, its quantity is comparatively restricted on account of the large coal mining element in the local economy. In 1968 the rateable valuc of industrial premises (which excludes coalmining) expressed as a ratio per head of thc study area's population averaged £3. 7 compared with £6. 0 for the region and £6. 6 for England and Wales. However, if the rateable value of the premises of statutory undertakings is taken into account (i.e. including coal mines), the study area ratio becomes £13. 2 per head compared with £12. 6 for the region and £14. 0 for England and Wales.

THE EMPLOYMENT SITUATION

EMPLOYMENT TRENDS

134. In the period 1953-59 there was a marked increase in employment of 10%, well above regional and national rates (see Table 5. 7 and Appendix D. Table D. 2). This resulted from increases in both male and female employment, but particularly the latter which had been at a low level at the beginning of the period. In the next eight years (1959-67), however, male employment declined by 2% but because female employment continued to increase at a very fast rate, the total change was still above thc regional rate. Table 5. 8 shows the pattern of change in this period by broad industrial groups. The decline in male employment was principally in the primary sector whilc thc increase in female employment was concentrated in the service industries. It should be noted, however, that up to 1966 the picture was one of employment growth which was reversed in 1966-7 by a decline which cancelled much of the previous growth. This change in the trend was confirmed by the results of the industrial survey.

135. Information about changes in employment in the period 1959-67 in individual industries is shown in Appendix D Table D. 3 and in diagrammatic form in Figure 9. The primary industries lost 4, 900 employees in the period, the great majority (4, 600) coming from coalmining, which lost 18% of its employment. Although a substantial loss, it was less than the regional fall (25%) and much less than the national (35%), reflecting the study area's relatively favourable position in respect of the quality of the coal seams and their improved productivity through mechanised working. New employment from the concentration of part of the National Coal Board Headquarters staff in Doncaster has to a certain extent offset reduced employment in the coal industry as a whole.

TABLE 5. 7: CHANGES IN TOTAL EMPLOYEES, 1953-59 and 1959-67 Percentages

Area	1953-59			1959-67		
	Males	Females	Total	Males	Females	Total
Study Area	+ 7	+ 19	+ 10	- 2	+ 27	+ 5
Yorkshire and Humberside	+ 2	+ 5	+ 3	+ 1	+ 9	+ 4
Great Britain	+ 4	+ 7	+ 5	+ 3	+ 12	+ 6

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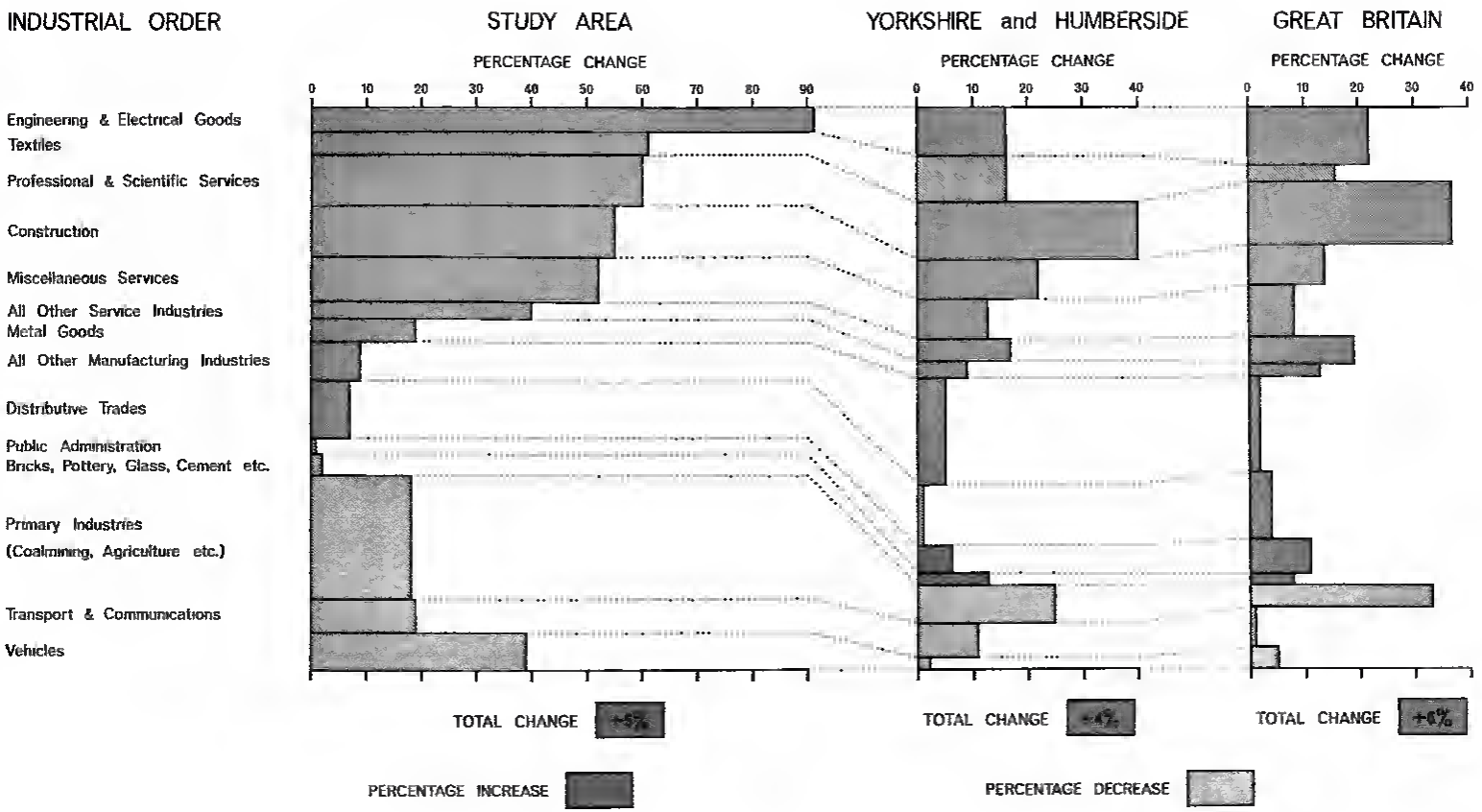

Fig. 9. EMPLOYMENT – CHANGES 1959–67 and DISTRIBUTION 1967

The length of the bars indicates the rate of change during the period 1959–67 and the depth of the bars is proportional to the numbers in each industrial order in 1967. The total change is thus approximately represented by the area of the bars.

TABLE 5.8: EMPLOYMENT CHANGES, 1959-67: SUMMARY

Thousands

Industrial Category	Total Employees 1959		Total Employees 1967		Changes 1959-67		
	Males	Females	Males	Females	Males	Females	Total
Primary	26.5	0.9	21.3	1.2	- 5.2	+0.3	- 4.9
Manufacturing	22.8	7.5	22.2	8.4	- 0.6	+0.9	+0.3
Construction	5.1	0.5	8.2	0.5	+3.1	-	+3.1
Services	16.8	15.8	17.7	21.1	+0.9	+5.3	+6.2
TOTAL	71.3	24.6	69.6	31.3	- 1.7	+6.7	+5.0

Note: Due to rounding, individual components do not necessarily add up to the total.

136. Manufacturing increased by only 300 (1%) against an average of 2% for the region and 5% for Great Britain. This overall situation was the result of the increases in various sectors offset by changes in a few branch firms due to organisational rather than locational reasons. Engineering and electrical goods increased by 2,100 (91%); this expansion, the largest in the manufacturing sector, covered increases in a number of small to medium size establishments. There was substantial expansion also in textiles, which increased by 1,400 (61%). This growth occurred mainly after 1963 and was largely in man-made fibres, which during this period was one of the few expanding branches of the textile industry. Vehicles, the area's largest manufacturing order, was the only order in this sector to show a substantial reduction, falling by 4,300 (39%). This was due to a decline in numbers employed (predominantly males) by British Railways in the manufacture and repair of railway rolling stock and equipment, and to the closure of a motor assembly unit. The national reduction in this sector was 5%, and the regional only 2%. The only other industry group to show substantial change was metal goods which increased by 19% (+700). In bricks, pottery, glass, cement etc. there was a small net loss of 2% (- 100) over the eight year period, although there was expansion regionally and nationally. Rapid expansion up to 1963 was followed by a decline.

137. These wide fluctuations in employment in the manufacturing sector to a large extent reflect the changing fortunes of the few large firms (some of them branch establishments) which dominate local industry (see para. 120). There is thus an element of instability in the local economy notwithstanding the diversity of industries represented; fluctuations in the demand for labour by one of these large firms have a pronounced effect on the local employment situation. It would also appear that local industry has been somewhat more vulnerable to the recent changes in the economic climate than the region or the country as a whole. Up to 1966, local employment growth ran well above regional and national rates, but in 1967 a considerable decline occurred. Between mid-1966 and mid-1967 the number of employees in manufacturing dropped by 2,000 from 32,500 to 30,500 and most of this decline was among males. This represented a decline of 6% in total employees in manufacturing in the study area

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compared with declines of 3% regionally and 2% in Great Britain as a whole. The firms responding to the industrial survey reduced employment by 1,400 males and 450 females between mid-1966 and the end of 1967.

138. In the construction industry the study area's higher proportionate employment and much faster growth reflect the extensive constructional and civil engineering activity in the study area throughout the period. The labour force rose very rapidly during the first few years because of major projects like the Doncaster by-pass and Thorpe Marsh power station. Subsequently employment dropped back but re-development in the town centre, large school contracts and continuing work on the roads have kept employment well above the 1959 level.

139. In the service sector the total increase in employment amounted to 6,200, a significantly higher rate of growth (19%) than either regionally (9%) or nationally (12%). The area appears to have been catching up in the provision of services, as this sector was still not strongly represented in 1967 (see para. 111). The main increases in employment were in education, health, catering, and motor repairing services within the profeasional and scientific and miscellaneous services groups. The rate of growth in the distributive tradea group in the study area was higher than nationally and contrasted with a small decline regionally. Transport and communications was the only industry to contract and this group lost employees at a faster rate than regionally or nationally due to the importance locally of railway employment, which fell by 28%.

UNEMPLOYMENT AND UNFILLED VACANCIES

140. Fluctuations in unemployment in the study area in the period 1957-68 (see Appendix D Tables D.4 and D.5 and Figure 10) have broadly followed the regional and national pattern. The level of unemployment has, however, generally been above that of the region, but in 1960 and continuously since 1963 it has also exceeded the national level. This reflected a deterioration in the male unemployment situation, female unemployment having been consistently and substantially higher than both regionally and nationally through the period, generally running at about twice the national rate. 1968 saw an even more marked deterioration in the study area's relative position compared with the region and Great Britain, and a similar deterioration was evident in the Yorkshire coalfield as a whole. Table 5.9 illustrates this and also shows that both the Yorkshire coalfield and the Doncaster study area had unemployment rates slightly higher than the average for existing Development Areas.

TABLE 5.9: UNEMPLOYMENT RATES - 1968

Percentages

	Average Total Unemployment 1968		
	Males	Females	Total
Doncaster study area	5.1	2.2	4.2
Yorkshire coalfield	5.1	2.2	4.3
Yorkshire and Humberside	3.4	1.0	2.6
Great Britain	3.2	1.1	2.4
Average for existing Development Areas	5.2	2.2	4.1

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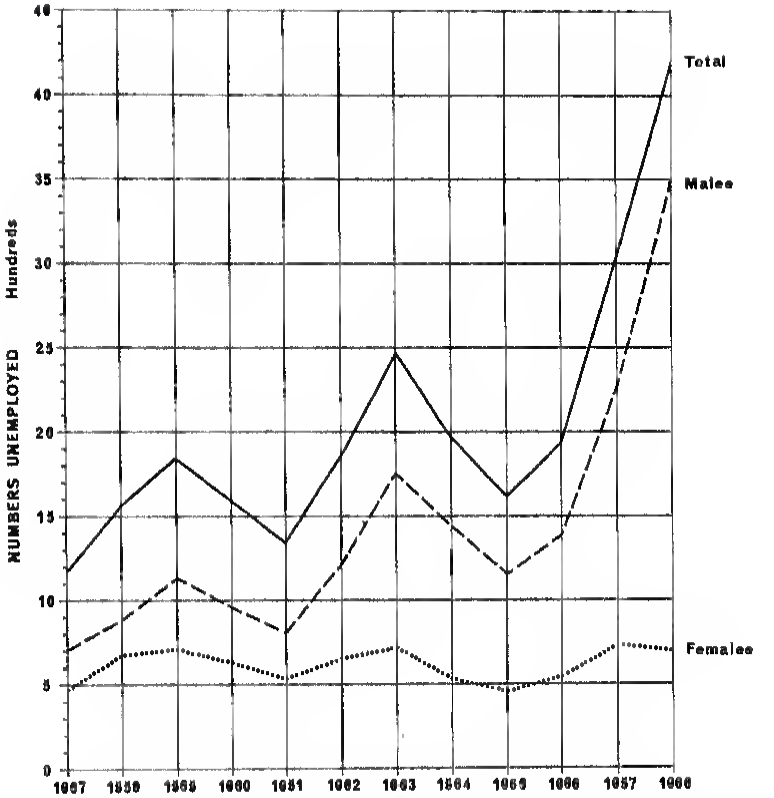

Fig. 10 (a). NUMBERS OF WHOLLY UNEMPLOYED FOR MALES, FEMALES AND TOTAL IN THE STUDY AREA, 1957 – 1968

Showing the annual average of monthly figures of registered wholly unemployed.

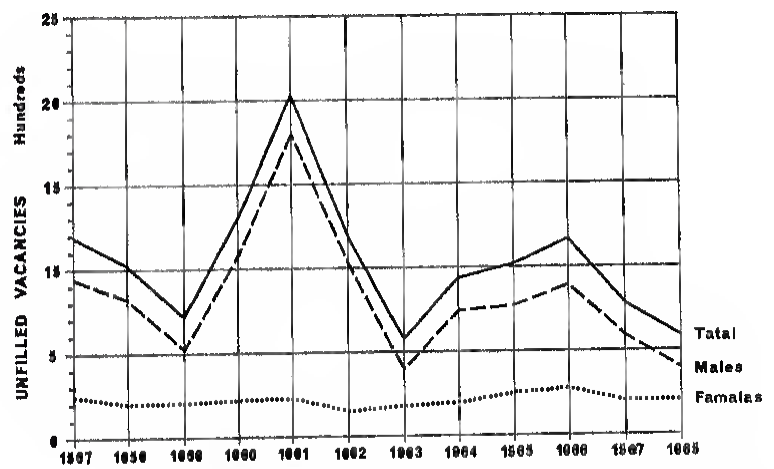

Fig. 10 (b). NUMBERS OF UNFILLED VACANCIES FOR MALES, FEMALES AND TOTAL IN THE STUDY AREA, 1957 – 1968

Showing the annual average of monthly figures of unfilled vacancies notified to Employment Exchanges.

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141. Information is available about three further aspects of unemployment in the study area. First, it is clear that the unemployment register is made up principally of the wholly unemployed; short-time working (temporarily stopped) has never accounted for a large proportion of total unemployment. Secondly, the age structure of the unemployed is biased towards the younger age groups. Although this is to some extent accounted for by the young age structure of the population as a whole, it also reflects a relative shortage of job opportunities for young persons of both sexes (see Table 5.10). Thirdly, there is also a bias towards the unskilled; in December 1967, 62% of unemployed males and 43% of unemployed females were unskilled, the corresponding national proportions being 50% and 26% respectively. Only 1.5% of the unemployed were in administrative, professional and technical occupations, compared with 5.8% nationally.

TABLE 5.10: UNEMPLOYMENT BY AGE GROUP AT 10th JULY 1967

Percentages

Area	Males			Females		
	Under 20	20 and under 40	40 and over	Under 20	20 and under 40	40 and over
Study Area	13	44	43	35	37	28
Yorkshire and Humberside	10	40	50	28	35	37
Great Britain	10	40	50	24	41	35

142. As might be expected, the number of unfilled vacancies notified to Employment Exchanges has been least when unemployment has been at its highest and vice versa (see Fig. 10(b)). However, in spite of fluctuations, Table D.6 in Appendix D shows clearly that demand for labour has been generally low. Moreover, for most of the period the male vacancy figures were influenced to a significant extent by an unsatisfied demand for workers in coalmining, e.g. this industry accounted for 50% of all unfilled vacancies for males in 1968, 61% in 1967 and 25% in 1965. For males, numbers unemployed were very roughly in balance with the number of vacancies up to 1962, but since then unemployment has consistently been higher than vacancies. The area's position became worse than the national and in 1968, when there was a marked deterioration, the ratio of unemployed to vacancies rose to 9:1, compared with a national ratio of $3\frac{1}{2}$:1. For females there has been an average of about three unemployed for every vacancy, whereas nationally there have generally been more vacancies than unemployed. Although the situation for females has been consistently adverse, there was not the same marked deterioration in 1968 as there was for males. The great majority of the outstanding vacancies required some degree of skill or qualifications, reflecting the shortage of unskilled employment. In 1968 only one male vacancy in every thirteen was classified as unskilled, and for females only one vacancy in six.

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ACTIVITY RATES

143. Activity rates express the number of employees who work in an area (including those registered as unemployed) as a percentage of the area's resident population aged 15 and over. For relatively small areas such as the study area activity rates are liable to distortion due to travel to work movements. Appendix E gives estimated activity rates for the study area. It should be noted that the male activity rates in the study area may be significantly inflated by the effect of the pattern of journeys to work into the study area. The female rates, however, are very slightly deflated. The figures suggest that there has been a significant fall in male activity rates in the period which has been more marked than regionally or nationally. This has occurred elsewhere in the Yorkshire coalfield and can be attributed in part to the change in the National Coal Board's retirement policy in 1960, which resulted in the compulsory retirement of all men over 65. Other factors involved were an increase in male population over the age of 15 at a time when the demand for coalminers was gradually easing after the peak of 1958/59; and a reduction in the number travelling to work in the study area.

144. Female activity rates were low throughout the period. Low female activity rates are common in the Yorkshire coalfield as a whole, due partly to a shortage of local employment and partly to the restraints imposed on married women going out to work by shift working in the coal industry. A further reason for low female activity rates may be that high earnings in the coal industry (and to some extent in other industries) may reduce the need or desire of women to seek employment. Until 1966 increases in the study area were no greater than in the region or in Great Britain but between 1966 and 1967 there was a significant increase in the study area whilst national and regional rates declined. This local increase coincided with the decline in male employment noted in para. 134. Even so, the female activity rate remained so far below the regional and national levels as to suggest that there possibly is still some reserve of female labour.

145. It is likely that this reserve could be tapped if there were sufficient variety of employment opportunities available locally offering convenient hours. This complex situation is currently the subject of a study covering the whole of South Yorkshire and the Yorkshire coalfield, which is being carried out for the Economic Planning Council by Sheffield University. It is hoped that this study will reveal more clearly the extent and type of female labour reserves which may be available.

EMPLOYER-ORGANISED TRANSPORT

146. Another pointer to the employment situation is information on travel to work in special transport organised by employers (excluding the construction industry). In December 1968 about 700 people travelled out of the area in special transport and about 100 travelled in. The inward movements were mainly short-distance journeys, principally 60 women workers in the glass industry from Maltby. Outward journeys, besides being more important numerically, generally covered much longer distances. Some 400 women travelled out of the area every day to places as far away as York, Bradford and Halifax, to work in a variety of industries which included motor vehicles (200), food (150), and woollen and worsted (50). The outward movement of 300 men was almost entirely from Thorne including over 200 who were travelling to the iron and steel industry in Scunthorpe.

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EXPERIENCE OF EMPLOYERS IN RECRUITING LABOUR

147. At the present time there are few general recruitment problems in the coal industry but there are some shortages in particular grades (e.g. under-officials).. However, in the past miners have been recruited from Scotland and the North East to the Doncaster district as was noted in the analysis of migration in Chapter 4. Present indications are that no substantial further recruitment from these sources is likely to be required but there could be minor recruitment of those with special skills. In view of the continuing decline in colliery manpower needs this is not surprising but it has to be remembered that the apparent insecurity of jobs in mining has caused some voluntary movement out of the industry. The National Coal Board's need to recruit therefore depends very much on the extent to which voluntary wastage causes labour demand to exceed supply.

148. In the industrial survey manufacturing firms were asked to indicate their general experience of recruitment during the last ten years and their experience in recruiting particular grades of labour during the last two years. Nineteen firms (employing 11,800 people) noted that recruitment had become more difficult during the last ten years whilst 24 firms (employing 9,100) thought there had been no significant change. Three (employing 3,200) had found recruitment easier. This result might appear inconsistent with the general increase in male unemployment which characteriaes the period, but the more detailed information in respect of the last two years (1966-8) - when total employment declined considerably - shows that the problem was a qualitative one. The difficulty in recruiting males was concentrated in the management and supervisory, technical and scientific and skilled grades (see Appendix C, Table C.10). The recruitment of unskilled male workers, male apprentices and school leavers was satisfactory or easy. On the female side, recruitment of the largest single group - "other full-time workers" (mainly unskilled), accounting for 55% of all female employment - was generally satisfactory. Recruitment of female clerical and office workers was found to be difficult by one-fifth of the firms replying.

EARNINGS

149. Statistical information about earnings is not available for areas as small as the study area. However, regional data of the earnings of male manual workers in different manufacturing industries are available and can be used to provide some estimate of earnings levels in the study area. This involves making two assumptions which may not be valid - namely that the local level of earnings in each industry was the same as the regional level and that the earnings of non-manual workers in manufacturing bore the same relationship to the regional mean as those of manual workers. Table 5.11 shows the proportions of males employed in the study area in those manufacturing industries in which regional average earnings in 1968 were respectively above and below the regional average for all manufacturing industries. Fifty-seven per cent of males in manufacturing in the study area were in industries with earnings above the regional average of 425s. 8d. compared with only 41% regionally. Moreover 35% of the study area's male workers were in industries receiving 30s. 0d. or more above the regional average, whereas the corresponding regional proportion was only 20%. The composition of the lower half of the table also reveals a relatively favourable position in the study area. Only 1% of the study area's workers were in industries receiving 30s. 0d. or more below the regional average compared with 16% regionally. It seems reasonable, therefore, to draw the broad conclusion that the earnings of adult male employees in manufacturing are

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significantly higher in the study area than in the region, and are thus nearer to, but still below, the U.K. average, which in April 1968 was 456s. 6d.

150. There are no equivalent regional statistics of earnings in coalmining, but the national average weekly earnings of males 21 years and over (all classes of workpeople) employed in the industry, including allowances in kind, was 513/3 at April 1968. This was a substantially higher figure than the regional average for adult manual workers in all manufacturing. These two rates are not strictly comparable, particularly since coalmining earnings fluctuate from area to area and from colliery to colliery. However, the generally productive and viable nature of the study area's collieries suggests a level of earnings at least not below the national level and probably above. This is supported by information in the National Coal Board's Annual Report and Statement of Accounts, 1967/8. Table 22 of this publication shows average weekly earnings of wage-earners (all ages) in the Board's Doncaster Area to be 462/2, including allowances in kind, compared with the corresponding Great Britain average of 450s. 11d. This leaves little doubt that for men the study area's coalmining earnings are substantially higher than the region's average in manufacturing.

TABLE 5.11: AVERAGE WEEKLY EARNINGS OF ADULT MALE MANUAL WORKERS - APRIL 1968

Males employed in those manufacturing industries in which the regional average weekly earnings for male manual workers were:-	Percentage	
	Study Area	Yorkshire and Humberside
(a) above the overall regional average (425s. 8d.)		
40/- or more above	26	16
30/- or more above but less than 40/-	9	4
20/- or more above but less than 30/-	2	5
10/- or more above but less than 20/-	13	8
Less than 10/- above	7	8
TOTAL	57	41
(b) below the overall regional average (425s. 8d.)		
Less than 10/- below	22	20
10/- or more below but less than 20/-	9	12
20/- or more below but less than 30/-	11	11
30/- or more below but less than 40/-	-	12
40/- or more below	1	4
TOTAL	43	59

Note: The employment statistics on which this table is based relate to mid-1967.

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151. Satisfactory statistics are not available to assess men's earnings in the remaining sectors of employment (mainly services) to enable a comparison to be made between the study area and the region. In the absence of such figures, conclusions about earnings have to be based on those for manufacturing and coalmining employment. These conclusions may be regarded as fairly representative, however, since these two broad categories of employment account for 61% of employees in the study area.

152. Information about average weekly earnings of female workers by industry is only available for the country as a whole. National figures for females for the principal manufacturing industries in the study area, however, suggest a level of earnings for women approximating to the national level, but rather below for girls under 18.

153. It must be emphasised that these comments relate to earnings by individuals and not by households. The relative pattern of household earnings is of course affected by the female activity rate, which in the study area is lower than the regional and national average, as noted above.

INDUSTRIAL RELATIONS

154. It is generally considered that industrial relations in the study area are reasonably good. The record of stoppages is broadly in line with the rest of the region. The area has a number of firms regarded as progressive in the industrial relations field. In the coal industry stoppages have decreased appreciably in recent years, the National Coal Board devoting considerable attention to the problems of absenteeism in this area as elsewhere.

EMPLOYMENT OPPORTUNITIES

155. While the proportion of skilled jobs is about average there is a lack of variety in male jobs due to the predominance of coalmining although with the increase in mechanised mining an increasing proportion of coalmining jobs are of an electrical and mechanical engineering type. There is an above average proportion of male semi-skilled jobs, but it is a feature of the study area that these are not in general available to boys under 18 and this is borne out by section (A) of Table 4.10. Employment opportunities for school-leavers are limited both in quantity and variety and this also shows up in the relatively high numbers of young persons unemployed. It was also seen in Chapter 4 that during the next few years the study area is likely to continue to have a supply of young people proportionately higher than nationally, so that the situation in regard to job opportunities for these youngsters could worsen. As noted earlier, the low ratio of females to males in employment, the high female unemployment rate, the low female activity rate, and the use of employer organised transport, all indicate a reserve of female labour for which there is an insufficient number and variety of jobs available. But it should also be noted that the female employment situation has improved considerably.

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EMPLOYMENT PROSPECTS

156. This section outlines the probable direction and extent of changes in the employment situation in the periods to 1971 and to 1975. The aim of this exercise is to reveal the nature rather than the preciae extent of the problems likely to arise to enable steps to be taken to solve them. Forecasts are made of labour supply and demand using certain explicit assumptions and taking into account recent trends in the atudy area, expectations of future national and regional changes together with information from the National Coal Board and the industrial survey. A high level of national economic activity roughly aimilar to that in 1966 haa been assumed for 1971 and 1975. For labour supply estimates aasumptions have to be made on such matters aa population changes, migration, activity rates and travel-to-work habits. The margin of error to which the estimates are subject is considerable, and accordingly a range of forecasts rather than one specific forecast has been prepared. Forecasting future labour supply and demand is particularly bazardous for small areaa such as this, and an outline of the methods used in preparing the estimates and of the inherent difficulties ia given in Appendix E.

DEMAND FOR LABOUR

157. The estimates of labour demand are particularly influenced by the anticipated reduction in employment (largely men) in the coalmining induatry. The 1967 White Paper on Fuel Policy (Cmnd. 3438) pointed out that the declining ahare of the energy market held by coal and the increasing need for mechanisation to reduce costs and increase productivity would result in a continuing decline in employment. Recent employment trenda show that in the study area the decline has already set in, and it is eatimated that employment will decrease to a total of nearly 16,000 in 1971. The level of manpower after 1971 will be determined by the demand for coal, the level of productivity, the viability of the individua collieries and by national policies. If increases in productivity continue at the preaent rate, the area will become more competitive in relation to the older parts of the coalfield and its manpower will fall less sharply. The significant number of administrative workers is unlikely to be subject to major reductiona by reaaon of continued concentration of the National Coal Board's Headquarters activities in Doncaster. in agriculture a continuation of the recent decline in employment is forecast, though not necessarily at the present rate. The result is a reduction of employment in the primary industries, from 22,000 in 1967 to between 14,000 and 15,000 in 1975.

158. Employment in the manufacturing industries is expected to remain approximately at its present level, with perhapa a marginal increase. This forecast is the net result of a number of expected increases being offset by reductions in employment brought about by improvements in productivity, changes in industrial organisation and (as in the case of the railway workshops) reduced demand.

159. Since 1967 there have been indications of reduced activity in the construction industry in the atudy area and a rise in the number of unemployed construction workers. Further road construction, town centre developments and hospital building schemea are planned, but the timing of some of these is uncertain and will be determined by general economic and other factors. It is assumed that in 1971 and 1975 road construction work will be at about the 1966 level, but that other construction activity will be at a rather lower level. The trend for manpower to reduce in this industry with improved methods and mechanisation must also be expected to continue so that a gradual decline in employment has been forecast up to 1975.

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160. In the service industries employment in transport and communications is expected to decline further, principally because of the heavy representation of the railway industry.

161. The remaining industries in the service sector are predominantly linked to (and therefore dependent upon) the local population. Changes in population through migration must affect employment in local service industries, so that in a forecasting exercise of this sort an assumption has to be made about future population levels. For present purposes it is assumed that no significant net change in population by migration takes place. This is optimistic, and assumes that the effects of the forecast reduction in coalmining employment will not result in net outward migration.

162. Retail distribution accounts for about four fifths of employees in the Distributive trades in the area. There have been increases in employment in recent years but these are not expected to continue, and a slight reduction by 1975 is forecast. A number of conflicting factors are at work; favouring expansion are the attractiveness of Doncaster as a shopping centre to people living outside the area, the increasing female activity rate and the possibility of development in wholesale distribution following the improvement in road communications. But against these growth indicators must be weighed the likely contrary effects on manpower of S. E. T. and the growth of "self-service" and generally larger units in the retail trade.

163. The most important elements in the professional and scientific services group are health and education services. Both have expanded substantially in recent years at a higher rate than either regionally or nationally, and there was a further major expansion (+ 1,200) to 1967. In health, hospital extension and new building projects will probably mean at least a continuation of the previous rate of increase. Local education authorities also envisage continued expansion, to cover (inter alia) population increases, more young people continuing at school beyond the age of 15, continued extension of further education, and the raising of the statutory school leaving age in 1973. A higher rate of expansion is forecast in this group than took place in 1959 to 1967. In the miscellaneous services order, on the other hand, although there are indications of further expansion, the area's exceptional recent growth rate cannot reasonably be expected to be maintained indefinitely and a reduced rate of increase has been allowed for to 1975. Within the remainder of the service sector the most important future trends are likely to be continued increases in employment in local government and insurance, banking and finance.

164. The estimates of future labour demand are summarised in Table 5.12, which includes estimates for male and female employment. In the primary industries a substantial decline in male employment is envisaged. Employment for both men and women in the manufacturing industries is expected to remain fairly stable although some slight increase may occur overall. In the service industries, however, substantial expansion of female employment is anticipated while male employment remains stable.

TABLE 5.12: LABOUR DEMAND ESTIMATES

Thousands

Industry	Estimated Labour Demand					
	1971			1975		
	Males	Females	Total	Males	Females	Total
Primary	15-16	1	16-17	13-14	1	14-15
Manufacturing	24-25	8-9	32-34	24-25	8	32-34
Construction and Services	25-26	24-25	49-51	25-26	26-27	50-53
Total	66-67	33-34	99-101	62-65	35-36	97-101

Note: Due to rounding, the columns do not necessarily add up to the totals shown.

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165. It is now possible to bring together these estimates of future demand for labour with those of the effective labour supply made in Chapter 4 (para. 97). The comparison is made in Table 5.13. On the male side, a deficiency of 4-6,000 jobs is estimated in 1971, increasing to a deficiency of 6-10,000 in 1975. On the basis of the assumptions used there will therefore be a substantial shortage of work for males unless considerable additional employment is provided. The shortage would not necessarily be expressed in the unemployment of this number of men; it would be more likely to take the form of a combination of unemployment, outward migration and lower activity rates. For females it is anticipated that although labour demand will increase significantly, the supply will be adequate to meet this demand and there may still be a marginal shortage of female employment.

TABLE 5.13: ESTIMATED SUPPLY OF AND DEMAND FOR LABOUR IN 1971 AND 1975

Thousands

	1971			1975		
	Males	Females	Total	Males	Females	Total
Labour Demand	66-67	33-34	99-101	62-65	35-36	97-101
Effective Labour Supply	71-72	34-35	105-107	71-72	36-37	107-109
Likely range of surplus (+) or shortage (-) of jobs	-4 to -6	Nil to -2	-4 to -8	-6 to -10	Nil to -2	-6 to -12

Note: All numbers have been rounded to the nearest thousand.

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SUMMARY

(i) Tbe local economy is based on coal mining (21,000 jobs) and manufacturing industries (30,000 jobs).

(ii) Tbe colliieries in the study area are generally large, modern and highly productive. Nevertheless, employment io coal mining is decreasing and is expected to continue to do so.

(iii) Although manufacturing firms cover a diverse range of iodustries, in 1967 eight large firms provided 60% of manufacturing employment. Tbere is comparatively little iinkage between firms.

(iv) In 1967, ebout one-third of all manufacturing employment was in 53 units established in the area since 1945.

(v) Firms consider that tbe principal advantages of iocation in the study area are good communications and the supply of labour.

(vi) In comparison witb other areas, the number of iodustrial buildings is limited, but they are generaliy modero and of good quality, although there are some older premises.

(vii) Up to 1966, empioyment was growing, often vigorously. In 1967 there was a set-back to empioyment growth, particularly to male jobs io manufacturing.

(viii) Recent employment changes provide evidence of vulnerability in the local economy, deriving from tbe dominant position of the coal industry and a few large manufacturing firms.

(ix) Recent trends in unemployment, unfilled vacancies and activity rates point to a sbarp deterioration in tbe employment situation, particularly for males.

(x) The ievel of earnings of manual workers appears to be good by regional standards and approximating to tbe national average.

(xi) Job opportunities are rather limited; for males, by the bias towards coalmioing; for females by the concentration of jobs in Doncaster and the leck of variety in manufactnring; and for young people by the iack of jobs involving training to semi-skiiled ievei.

(xii) An assessment of employment prospects suggests that unless oew sources of employment come into the area tbere will be a deficiency of 4-6,000 male jobs in 1971 and 6-10,000 in 1975. There is not iikely to be a serious sbortage of female jobs.

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6. SOCIAL ENVIRONMENT

166. This is the first of two chapters which are primarily concerned with the attractiveness of the study area as a place to live. The aspects examined now are the provision and quality of housing, education and health services, shopping facilities and community life. Aspects of the physical environment landscape, climate etc. - are examined in Chapter 7.

HOUSING

THE PRESENT SITUATION

167. In 1966, there were some 76,000 dwellings in the study area. The quality of this housing stock can be measured in a variety of ways, some of which are summarised in Table 6.1. It can be seen that, using the definition in the Housing Act 1957 as interpreted by the local authorities concerned, the study area possesses a lower proportion of unfit houses than either the region or England and Wales (Col.1). A similar position obtains with regard to households lacking one or more of the amenities covered by the 1966 Census, namely hot water, fixed bath, or water closet inside the house (Col.2).

TABLE 6.1: QUALITY OF THE HOUSING STOCK

Area	Percentage of housing stock:-					
	Statutorily unfit (first quarter, 1965) (1)	Lacking one or more amenities (1966 Census) (2)	With a rateable value (April 1968) of:- *			
			under £30 (3)	£30-£55 (4)	£56-£100 (5)	over £100 (6)
Study area	3.5	23.8	11.1	53.4	31.2	2.6
Yorkshire and Humberside	8.7	28.0	28.5	41.0	22.6	3.7
England and Wales	5.5	27.6	14.2	27.3	38.8	17.1

*Note: These figures do not add up to 100% because dwellings rated separately (mainly agricultural dwellings) are excluded.

168. The rateable value of a dwelling gives a general indication of its size, structural condition, amenities and environment even though rating assessments tend to vary in different parts of the country. Table 6.1 shows that the study area bas significantly fewer houses of rateable value under £30 than the region or than England and Wales. It has correspondingly higher proportions in the £30-£55 and £56-100

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rangcs than the region, but fewer in the latter range than England and Wales. In Yorkshire and Humberside, houses with a rateable value over £100 represent the type of property which is attractive to people in the higher profcssional and managerial groups. In this respect the study area is less well provided when compared with the region as a whole. There was some support for this view from firms responding to the industrial survey.

169. A high rate of house building has been sustained in recent years (see Table 6.2). The rate of completions in the period 1945-68 has been above the regional and national rates due to a high level of activity in the public sector. As a result, a higher proportion of the housing stock is modern than in the region or the country as a whole.

TABLE 6.2: HOUSE BUILDING RATES

Area	Houscs completed 1945-1968: average annual completions per '000 population in 1968			Proportion of the housing stock built since 1945 (%)
	Public sector	Private sector	Total	
Study Area	3.4	1.8	5.2	39
Yorkshire and Humberside	2.8	2.0	4.8	33
Great Britain	2.9	2.1	5.0	36

170. Considerable progress has also been made in the clearance of unfit houses since the national survey in 1965. Table 6.1 shows that at that time 3.5% of the housing stock (2, 600 houses) were considered unfit. At 31st December 1968 this number had been reduced to 1, 800 or 2.4% of the total stock of dwellings.

171. The overall picture that emerges is of a modern housing stock in good condition. The appearance of bousing areas is (with certain exceptions) not as good as it might be, although better than is usual in mining areas. An examination of house prices in the Doncaster area show that they are often as much as one-third below average prices for England and Wales, particularly for older properties.

FUTURE NEEDS

172. New houses will be needed, first to overcome existing bousing shortages; secondly to replace dwellings which do not meet modern living standards and whicb are incapable of improvement; and thirdly, to provide for additional population. An estimate has been made of the study area's requirements of houses up to 1981 assuming that the present population is retained with its natural increase. Chapter 4 showed that on this basis the population of the study area will rise to about 285, 000 by 1981. It is estimated that this population would comprise about 91, 000 households. Assuming that each household occupies a separate dwelling, 17, 000 additional dwellings would be required. This is by far the largest element in the need for new houses as can be seen from the summary in Table 6.3.

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TABLE 6.3: HOUSING REQUIREMENTS TO 1981

To meet:-	Additional dwellings required
Population growth	17, 000
Existing shortages and vacancies	3, 000
Replacement needs	3, 500
Total	23, 500

173. An estimate has been made of the needs of those who do not have their own house at present but who might have if circumstances were more favourable. It is also necessary to allow for an appropriate proportion of dwellings to be vacant for one reason or another. Taking these two factors together, it is estimated that 3, 000 more dwellings will be necessary.

174. It is extremely difficult to arrive at a really accurate figure for the number of dwellings which are, or will become, substandard by 1981 and which will require replacement. Estimates have been made by taking different criteria, such as age of buildings, and local authorities' estimates of the present and future number of unfit dwellings. On this basis it will be necessary to clear about 3, 500 dwellings by 1981. This should present no great problem, as clearance is already taking place at the necessary rate in the study area as a whole. It should be noted, however, that the need differs from one local authority area to another.

175. The total number of new dwellings which would be required, therefore, is 23, 500. If it is assumed that about half the 3, 500 houses required for re-development purposes can be replaced on cleared sites, new land will be required for 22, 000 dwellings. The implications of this in terms of land requirements are discussed in Chapter 8.

176. In addition to the need for new houses there is a need for the improvement of old houses which are structurally sound but lack modern amenities in one form or another. The importance of bringing these houses up to standard was underlined in the recent White Paper "Old Houses into New Homes" (Command 3602). The local authorities estimate that about 8, 000 dwellings in the study area would be capable of improvement on the lines suggested in the White Paper.

EDUCATION

177. A purely statistical measurement of the quality of education services in the study area may be obtained from data on the size of classes, the physical condition of school buildings and awards for further education. Information on registration size of classes is shown in Table 6.4.

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TABLE 6.4: OVERSIZE CLASSES 1965-1967

Area	Percentage of classes which were oversize:-					
	Junior classes (over 40 pupils)			Senior classes (over 30 pupils)		
	1965	1966	1967	1965	1966	1967
Doncaster C.B.	10.5	15.9	17.8	34.7	32.4	39.2
Rest of study area	4.5	4.1	4.9	57.2	57.0	48.2
Study Area	6.3	7.6	8.8	46.0	44.7	43.8
England and Wales	12.3	11.7	11.3	39.8	37.7	36.5

In junior classes the study area showed a lower proportion of oversize classes than nationally hut there was a higher proportion of senior classes in the study area which were oversize. Within the overall study area figures there are some differences between the county horough and the rest of the study area. It should he remembered, however, that the employment of part-time teachers facilitates the splitting up of classes for teaching purposes.

178. Tahle 6.5 shows the proportion of pupils in schools affected by certain deficiences, e.g. outdoor sanitation, cramped site, poor kitchen and dining facilities, no hot water supply. In 1962, when the nation-wide School Building Survey was undertaken, the general condition of the schools in Doncaster C.B. was very much hetter than in the country as a whole, but in the rest of the study area the position was rather worse. A considerable improvement has since heen made so that in 1968 less than a quarter of the pupils in the study area were in schools affected by one or more of the deficiencies. Unfortunately, no regional or national data are availahle for comparison.

TABLE 6.5: PUPILS IN PRIMARY AND SECONDARY SCHOOLS AFFECTED BY CERTAIN DEFICIENCIES, 1962 and 1968

Area	1962			1968		
	Total Pupils	Pupils in schools affected by deficiencies		Total Pupils	Pupils in schools affected by deficiencies	
		No.	%		No.	%
Doncaster C.B.	14, 966	3, 057	20	15, 614	2, 528	16
Rest of study area	26, 220	15, 463	59	31, 249	7, 661	24
Study Area	41, 186	18, 520	45	46, 863	10, 189	22
E. & W. Ridings	659, 400	401, 200	61	N.A.	N.A.	N.A.
England and Wales	6, 704, 900	3, 910, 900	58	N.A.	N.A.	N.A.

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179. Information about further education awards obtained by pupils in Doncaster C.B. is shown in Table 6.6. In all categories of award and in total, Doncaster has a better record than the region and compares favourably with England and Wales as a whole, even though the overall rate of pupils going on to further education (i.e. including those not supported by awards) is rather lower (Table 4.8).

TABLE 6.6: FURTHER EDUCATION AWARDS - ANNUAL AVERAGE OF NEW AWARDS TAKEN UP, SEPTEMBER 1961 - JULY 1966: DONCASTER C.B.

Per thousand aged 18-19

Area	Awards made by Local Education Authorities			Students entering training colleges	Total
	Full and lesser value awards tenable at Universities	Tenable at other places of further education			
		Full value	Lesser value		
Doncaster C.B.	40.3	33.0	6.2	51.4	130.9
Yorkshire and Humberside	38.1	29.0	5.4	38.1	110.6
England and Wales	40.4	29.9	13.7	32.9	116.9

180. These assessments of the quality of education services in the study area give a rather mixed result. Whilst the quality of school buildings appears to be good there are some problems of oversize classes. But the number of awards made by Doncaster C.B. suggests that there are ample opportunities open to young people for further education.

HEALTH SERVICES

181. The planning of health services is based wherever possible on national targets for standards of provision; but for the purpose of the present study, comparison with the current national situation is considered to be more relevant, although it must be admitted that the significance of the bed as the unit for measuring the proviaion of hospital services can be exaggerated.

182. Table 6.7 compares provision of hospital beds as between the Sheffield Regional Hospital Board's Doncaster planning area (which includes the study area and an area to the south of it) and the nearby Barnsley planning area. In the two planning areas, the provision of acute beds appears low in comparison with the national average, but this latter figure includes regional acute specialities not represented in the local figures. Even so, the Doncaster figure is low, although the supporting departments for diagnosis and treatment are comprehensive and modern. The development of the

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Doncaster Royal Infirmary is expected to be completed in the autumn of 1969 by which time the number of beds will have increased considerably.

TABLE 6.7: PROVISION OF HOSPITAL BEDS 1967

Service	Beds per '000 population		
	Doncaster planning area	Barnsley planning area	England and Wales
Acute Beds	1.90	2.34	3.7
Maternity	0.43	0.58	0.42
Geriatric (per '000 population aged 65 and over)	(10.7)	(9.4)	(5.5)

183. Table 6.8 shows that the study area suffers from an overall shortage of doctors and dentists. The extent to which an area needs more doctors is investigated by the Medical Practices Committee, who classify local authority areas into one of four types according to their needs, i.e. 'designated', 'open', 'intermediate' and 'restricted'. 'Designated' areas are those in most need of doctors and admission to practice there is automatic. A special allowance is given to doctors practising in an area which has been continuously 'designated' for three years or more. In the study area, Doncaster C.B., Adwick-le-Street U.D., Bentley-with-Arksey U.D., Thorne R.D. and parts of Doncaster R.D. are all 'designated' areas. The remainder of Doncaster R.D. is an 'open' area, i.e. admission to the medical list is usually automatic but carries no special allowance.

TABLE 6.8: GENERAL PRACTITIONERS AND DENTISTS, 1968

Area	Patients per doctor[2] at 1st October 1968		Population per dentist	
	No.	Index[1] (E&W = 100)	No.	Index[1] (E&W = 100)
Doncaster C.B.	2,771	112	5,265	115
Rest of study area	3,065	124	10,626	233
Study Area	2,935	118	7,859	172
Yorkshire and Humberside	2,587	104	5,915	130
England and Wales	2,477	100	4,561	100

Notes: 1. In this table, an index over 100 is unfavourable.

2. These figures relate to doctors providing full general medical services.

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184. Assessed on a purely statistical basis, the study area is generally well served as regards health and welfare services provided by the local authority. Table 6.9 shows that in 1965 Doncaster C.B. was very well staffed, a situation which was maintained in 1968 (when the ratio was 1.37 staff per thousand population). However it should he noted that this favourahle situation is mainly due to a very high provision of home helps in relation to a near average provision of home nurses, midwives and social workers, and a shortage of health visitors. In the remainder of the study area, information for 1967 specially ahstracted for this study shows that it also was well staffed (with a ratio of 1.21 staff per thousand population).

TABLE 6.9: LOCAL AUTHORITY HEALTH AND WELFARE SERVICES, 1965

Area	Domiciliary Services: Staff (full-time equivalent) per '000 population		Homes and special housing for the elderly: provision of places per '000 population over 65	
	No.	Index (E&W = 100)	No.	Index (E&W = 100)
Doncaster C.B.	1.40	124	32.7	123
West Riding Administrative County	1.17	104	82.0	309
Yorkshire and Humherside	1.22	108	45.8	173
England and Wales	1.13	100	26.5	100

185. By 1965, the provision of places in homes and special housing for the elderly in the West Riding was well above the national rate. In the county, a large number of places have been provided in special housing, i.e. where there is a resident warden, or where staff employed in a nearby home for the elderly are on call. Accommodation provided by Housing Societies is included in addition to local authority provision.

SHOPPING

186. Table 6.10 compares the retail turnover per head in 1950 and 1961 of Doncaster with other towns in the Yorkshire and Humberside, North West and East Midlands regions. The towns selected for comparison were either in the population range 80, 000 to 100, 000 in 1961 or had hinterlands with similar characteristics to those of the Doncaster area (e.g. Mansfield and Wakefield) or are competing centres nearby (e.g. Scunthorpe).

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TABLE 6.10: RETAIL TURNOVER PER HEAD OF TOWN POPULATION

Town	Turnover per head		Population 1961 ('000)
	1950 £	1961 £	
Doncaster C.B.	157	299	86.4
Southport C.B.	137	214	82.0
Grimsby C.B.	119	203	96.7
Rotherham C.B.	116	189	85.3
Halifax C.B.	108	178	96.1
Burnley C.B.	102	172	80.6
Rochdale C.B.	102	162	85.8
Lincoln C.B.	137	235	77.1
Barnsley C.B.	131	254	74.6
Chesterfield M.B.	127	234	67.8
Scunthorpe M.B.	113	178	67.3
Wakefield C.B.	122	235	61.6
Mansfield M.B.	150	265	53.2

All the towns listed in Table 6.10 except Rochdale had a retail turnover per head higher than the average for England and Wales (£100 in 1950 and £162 in 1961). This is mainly a reflection of the extent to which the towns act as shopping centres for the areas outside their boundaries, but variations in income and patterns of spending will also affect the figures. Unfortunately it is not possible to determine the relative importance of these factors.

187. Both in 1950 and in 1961 Doncaster had the highest retail turnover per head of the towns listed in Table 6.10. This undoubtedly reflects the comparatively large and populous area of influence beyond the boundaries of the County Borough. It is likely also to reflect a high level of spending derived from the higher earnings (particularly in the coalmining industry) noted in the previous chapter.

188. The growing importance of Doncaster as a service centre - i.e. not only for shopping, but for a wide range of other services - is noted in a recent study of service centres in England[11]. After Leeds, Sheffield, Hull and Bradford, Doncaster ranked equal fifth in 1965 with Huddersfield and York in the hierarchy of service centres in the region. This represented a significant improvement in status since 1938. Planning permissions granted for investment in new shopping floorspace since 1961 have resulted in increased numbers of shops, not all of which have been occupied. Furthermore the new shops which have been established have not catered for the lack of facilities for speciality shopping; for example no new department stores have been built.

189. Since the beginning of 1963 521,000 sq. ft. of shopping floorspace (excluding storage and other ancillary uses) have been built in major schemes in Doncaster C.B. Included in this total are two large schemes, each exceeding 100,000 sq. ft. in floor area 25% of which was vacant early in 1969. One of these schemes incorporates a covered air conditioned shopping precinct. Together with the recent provision of car parking facilities in the central area, this represents a considerable resource in

11. R.D.P. Smith. The Changing Urban Hierarchy in Regional Studies Vol. 2 No. 1 September 1968.

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infrastructure which is available to support further growth. There is also unused shopping floorspace in the study area outside the County Borough, largely resulting from the trend in favour of shopping at supermarkets.

COMMUNITY LIFE

190. There are three broad types of community in the study area, namely the County Borough itself, the mining villages and the agricultural villages, many of which have grown recently with the influx of people working in Doncaster.

191. Doncaster itself is the centre for a wide variety of activities in the study area. In addition to the many clubs and societies covering a wide range of sporting and social activities, the town has an Arts Centre which is used for concerts, film shows, operatic and repertory productions which attract audiences from a wide area. The town is also a centre for many forms of entertainment - cinemas, dance halls, bowling alleys etc. - which particularly attract young people from a wide radius. Sporting activities are many and varied, providing for both participants and spectators; there are ten horse racing meetings a year, the St. Leger being a particular attraction.

192. Social life in the villages around Doncaster is also vigorous. The high proportion of young people in the population is reflected in the wide participation in sporting activities particularly football, cricket and rugby. In the mining villages much of the social life is traditionally centred on the Miners' Welfare and Working Men's Clubs with their wide range of sporting and social activities, including brass bands, fishing, and small choir groups. The provision of social clubs for old people is also a characteristic strength in the mining communities. Such communities were singled out for special mention in a recent report of the Yorkshire Council of Social Service, Preparation for Retirement, as being so well integrated that retirement does not present the social problem it does in most urban areas.

193. The agricultural villages in the study area also have their own distinctive variety of social activities with sport very prominent and with clubs and societies covering other interests. In recent years there has been a tendency for people dependent upon work in Doncaster to settle in these agricultural villages and this is causing the old established communities to adapt to the change in social structure.

194. Recently there has been a considerable effort to improve facilities for young people in the agricultural and mining villages, and a number of new youth clubs and swimming baths have been opened. Although a survey of major sports facilities in the region carried out by the Yorkshire and Humberside Regional Sports Council showed that in relation to its population, the study area had considerably fewer pools than the regional average in 1967, the recent completion of several projects has rectified this. However, the study area as a whole undoubtedly provides a considerable range of facilities both within the County Borough and in the villages. These facilities are generally readily available to newcomers to the area and therefore represent an asset in the context of economic growth.

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SUMMARY

(i) The study area has a modern housing stock in good condition. House prices are substantially below average prices for England and Wales.

(ii) It is estimated that about 23,500 extra houses will be required by 1981. Most of these (17,000) will be required to accommodate the natural growth of population.

(iii) The quality of school buildings appears to be good, but there are problems of over-size classes. The number of awards made by Doncaster C.B. suggests that there are ample opportunities open to young people for further education.

(iv) The provision of hospital beds is at present low in relation to population, although the supporting departments for diagnosis and treatment are comprehensive and modern.

(v) There is a shortage of doctors and dentists in the study area.

(vi) The area is generally well served as regards health and welfare services provided by the local authority.

(vii) Doncaster is an important centre for shopping and other services, ranking equal fifth in the region after Leeds, Sheffield, Hull and Bradford.

(viii) Much of the shopping floorspace and associated town centre development has been built recently, and there is a significant reserve of unused capacity available to support further growth.

(ix) Community life is particularly strong in the mining villages and is good in respect of entertainment facilities in Doncaster, although in comparison with the major urban centres, a town of this size is necessarily limited in the range of facilities it can provide.

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7. THE PHYSICAL ENVIRONMENT

LANDSCAPE

195. The landscape of the study area is composed of three main elements - the developed area of Doncaster itself, the mining villages, and the countryside with its associated rural villages. The geographical and historical factors which influence the present day landscape were outlined in Chapter 1.

196. In environmental terms the character of Doncaster still reflects some of the characteristics of a market town, although the growth in the town's importance in the railway age is certainly evident in the inner housing areas, and its rapid development in the present century has given it a predominantly 20th century character. Unlike many other towns in the region, it does not suffer unduly from the aftermath of the industrial revolution. The suburban areas in the north-east and south-west sectors of the town are not outstanding in any way. But south-east from the town centre, and along the old Great North Road, is a section of the town which now, as in previous ages, provides a residential area made particularly pleasant by the racecourse and a number of other important public open spaces.

197. On the north side of Doncaster suburban development in Bentley merges with the second element - the mining village. In environmental terms these large 20th century communities are by no means uniform in quality although in general they tend to be treeless and monotonous, the principal feature being the pithead gear and tips of the coal mine. Because of the depth of the coal seams, these mines and their associated tips are large and are often seen from a wide surrounding area. But, because the mines are widely spaced, the overall impression is of a few large and physically distinct communities set in a predominantly rural area.

198. The third element in the landscape is the extensive area of rural countryside. Its main function is of course farming and in its large area of good quality land (see Chapter 8) it possesses a resource of national significance, particularly important because agriculture is an import-saving industry. But in common with similar areas elsewhere in the country there is increasing pressure for the countryside to take on a second function by catering for the recreational requirements of people living in nearby urban areas. The potential for recreational use of the rural parts of the study area is therefore of special interest.

199. The countryside varies in character from east to west. The eastern part of the study area has few trees, is flat and relatively unattractive. It contains two large areas of peat land, Thorne Waste and Hatfield Moors, and two airfields, Lindholme and Finningley. The area south-east of Doncaster is heavily pock-marked with existing or abandoned sand and gravel workings, the villages are uninteresting and the whole environment needs a certain amount of rehabilitation. In contrast the north-western part of the study area contains the lower end of the magnesian limestone ridge which runs in a north-south direction through the West Riding and passes to the west of Doncaster. This area is fertile and well wooded and contains a number of fine parkland areas and charming stone-built villages, e.g. Hooton Pagnell. It has been indicated as a countryside conservation area on the Doncaster Rural District Map which has recently been adopted as a policy document by both the West Riding Planning

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Committee and the District Council. The south-western part of the study area around Old Edlington, Wadworth and Braithwell is also on the limestone belt, but is more undulating and open with fewer trees. But the villages are still pleasant (though not outstanding) and the County Council consider that the area is worthy of inclusion in the conservation area referred to above. The area between Rossington and Bawtry contains an attractive, well wooded ridge extending into Nottinghamshire and linked by the old Great North Road with the pleasant suburban area of Doncaster referred to in para. 196 above.

200. There is a problem of derelict[12] spoiled and degraded land, in all totalling some 4,500 acres, or 3% of the study area. It should be noted, however, that the problem is frequently felt over a much wider area than the site itself, so that the acreage involved is an inadequate measurement of the impact on the landscape. The main components of the problem are as follows:-

Tipping	Acreage:- Active	Derelict[12]	Degraded
(a) Colliery waste	650	200	-
(b) Power station waste - Thorpe Marsh	210	-	-
(c) Industrial waste - mainly in and around Doncaster	200	-	-
Surface Mineral Working - mainly sand and gravel and limestone	1,480	590	-
Degraded land - mainly around Bullcroft and Hatfield collieries together with a large area alongside the main railway line south-east of Doncaster	-	-	1,030

201. One of the main features is the high proportion (over two-thirds) of mineral workings and tips which are active. All the collieries in the area are active, as too are the larger limestone quarries and most of the sand and gravel workings. This high proportion of active sites is in contrast to other areas of the West Riding, particularly the older part of the coalfield which has many more derelict mineral working and tipping sites.

202. The land within the derelict and degraded categories already represents a large problem of reclamation and improvement which is likely to become increasingly critical as active tips become disused and sand and gravel areas are worked out. The total land area likely to be affected by extractive industry tipping and land wastage by the turn of the century could therefore be considerable. In the case of the problem of colliery waste, the existing tips are of such size and shape as to make their reclamation prohibitive for any purpose other than amenity landscaping. But materials which are generally tipped with no positive use in mind could be used to advantage, for instance in making up low-lying land. In particular pulverised fuel ash is of growing importance as a constructional material. There are also possibilities of derelict

12 Derelict land is defined as land which has been so damaged by industrial or other development (including mineral working) that it is likely to remain incapable of beneficial use unless subject to special treatment.

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land being used for agriculture, forestry, recreation or building. These deserve careful consideration if the most effective use is to be made of the land resources of the study area.

OUTDOOR RECREATION

203. The main extensive area for outdoor recreation in the study area is the well wooded limestone area to the west of Doncaster. This provides an attractive destination for short excursions into the countryside, and some of the villages become very congested on fine weekends. Cusworth Hall and grounds bave been acquired by the Doncaster Rural District Council for use by the public and one should also note the importance of Conisbrough Castle (just outside the study area) and the steep-sided section of the valley of the Don immediately to the east of it.

204. Doncaster racecourse is one of the country's leading courses with frequent meetings including the St. Leger. The grandstands are currently being rebuilt at a cost of £1½ million. The Badsworth Hunt meets in the northern half of the study area. On the north-eastern boundary is the Southfield Reservoir, a supply reservoir for the adjacent Aire and Calder Navigation. It covers 120 acres and is used for fishing and also by a sailing club. Similarly, adjacent to the south-western corner of the study area near Thrybergh there is the Thrybergh Reservoir (45 acres) which is currently used for fishing and bird watching. There is also a small area of water at Firsby available for fishing; unfortunately some of the rivers and canals are unsuitable for fishing owing to pollution. There are two golf courses in Doncaster, and others at Rossington Bridge and at Hickleton.

205. No major outdoor recreation areas are very near the study area. The most accessible are the Peak District National Park about 25 miles away (made more accessible by the M.18) and Clumber Park, 18 miles to the south in Sherwood Forest. The Yorkshire Dales National Park is approximately 50 miles away and the nearest resort on the east coast about the same distance.

206. It is fortunate in an area where outdoor recreation facilities are at present so sparse that there are a number of sites with potential for use as country parks as envisaged under the Countryside Act. These sites comprise the nuclei or the old landed estates which, to a large extent, fall within the limestone country and which have attractive houses and adjoining landscaped parkland. There is also considerable potential in the south-east part of the study area in the sand and gravel field for the provision of facilities, provided that sufficient thought and effort are applied to rationalise the future extraction of these minerals. It might be that a sufficiently large area of water could be obtained to make worthwhile recreational units in areas where there is a water table high enough to ensure that the workings remain wet or wbere such areas are specifically designed for flood relief control or for water purification purposes. This would, to some extent, involve a cbange in policy on the part of both the local planning authority and the Ministry of Agriculture inasmuch as hitherto every effort has been made to restore the maximum area to agricultural use. However, the restoration has generally been so poor that it is of little real use.

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CLIMATE

207. To assess the characteristics of the local climate we have compared data on observations taken at Finningley airfield with similar data for other places both within and outside the region. Finningley is 6 miles south-east of the built-up area of Doncaster-Adwick-Bentley and it is possible that air pollution from this source may have some effect on visibility at Finningley. Only 20 feet above sea level, this flat low-lying area is typical of much of the study area, most of which is below the 50 foot contour.

208. Average temperatures at Finningley are not greatly different from those experienced in other parts of Yorkshire and Humberside, although they are nevertheless among the highest in the region. The mean maximum temperature in July of 69°F (20.6°C) is similar to Weston-super-Mare and in January the mean minimum temperature of 42.5°F (5.8°C) is practically the highest in the region, and is reflected in a low number of days with ground frost.

209. A much more widely variable factor is rainfall which at Finningley averages 23" per annum. This is a typical rainfall for the lowland areas of eastern England from the Humber to the Thames and contrasts strongly with the Pennines where the rainfall is at least twice as high. Nevertheless, Finningley experienced heavier and more frequent falls of snow than many other parts of England and Wales despite its low altitude. This again is characteristic of eastern England, which tends to receive more snow from easterly winds off the North Sea.

210. The flat open character of the area means that the pattern of the direction and strength of winds through the year shows a remarkably even distribution about the compass; it also means that higher average wind speeds tend to be experienced here than in many other parts of the region. Winds of over 19 m.p.h. (Beaufort Force 5) occur on nearly 14% of those occasions when readings are taken, compared with 10% at Howden and only 1% at Sheffield.

211. Two detailed climatic comparisons that may be made with Huddersfield (Oakes) and Dishforth are exposure (as measured by winds greater than 24 m.p.h. occurring in combination with temperatures of less than 40°F (4.4°C)) and cold damp conditions (100% relative humidity occurring with temperatures of 32-40°F, or 0-4.4°C). Exposure at Finningley is about the same as at Dishforth but very much less than at Oakes (761 ft. above sea level). However, cold damp weather conditions occur much more frequently at Finningley (149 observations) than at either Dishforth (80 observations) or at Oakes (70 observations), especially in January when the ratio of such observations at Finningley to either of the other two stations rises to 3:1.

212. Data on the occurrence of fog show that Finningley has a high incidence which is exceeded only by highly industrialised parts of the West Riding. It is concentrated particularly in the winter months.

213. By contrast, the daily mean hours of sunshine over the year as a whole at Finningley is one of the highest in the region, bettered only by points on the coast (Spurn Head, Cleethorpes and Skegness). In fact this record is better than that of four of the five climate stations in London, only Hampstead having more sunshine. In January, however, the record is poor compared with six other stations in the

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industrial West Riding and it appears that climatic conditions leading to fog are possibly made worse by air pollution, thus cutting down the sunshine record sharply in the mid-winter months.

AIR POLLUTION

214. Air pollution in the study area is sampled in seven localities where local authorities or voluntary organisations co-operate with the Warren Spring Laboratory of the Ministry of Technology in taking regular readings for the National Air Pollution Survey. This survey concentrates on measurements of two pollutants which are of a size capable of entering the human being i.e. small airborne smoke particles and gaseous emissions of sulphur dioxide. Grit and dust fall (which was extensively measured prior to 1961) is considered to be less significant from the medical point of view.

215. Table 7:1 lists the seven sites concerned and compares the levels of pollution by smoke and sulphur dioxide in 1965-66 with the national averages for similar sites. Further details, including an account of the site classification code and data for 1963-4 will be found in Appendix F. The table shows that smoke pollution was above the comparable national average throughout the study area; at one site it was twice as bad and at three others it was about 50% above relevant national average. Generally, however, it is no worse than in other industrial parts of the West Riding, and it is notable that smoke pollution in Doncaster C.B. bas fallen sharply since 1961. Nine smoke control zones have been established covering 3,000 acres and involving over 5,000 Council and nearly 6,500 private houses and about 650 other premises (factories, shops, etc.). Doncaster C.B. is the only part of the study area to have been listed by the Ministry of Housing and Local Government in 1962 as a "black" area requiring smoke control. Adwick and Bentley Urban Districts adjoining Doncaster were not thus designated. Doncaster is now cleaner than some of the surrounding areas which have no smoke control in operation.

216. Sulphur dioxide pollution - which, unlike smoke pollution, has been a growing problem nationally - is not so serious in the study area. Two of the three sites in Doncaster C.B. show very much more favourable conditions than the comparable national averages. Elsewhere in the study area, bowever, there are two areas shown by the data to be suffering from serious pollution on a scale similar to that experienced in other parts of the industrial West Riding. The first is Bentley - the worst location for both smoke and sulphur dioxide pollution - and the second is Askern.

217. Grit and dust fall is no longer included in the National Air Pollution Survey but is still measured voluntarily by many authorities. The last readily available annual data are for the year 1963-64 when measurements made at sites in Bentley and Doncaster showed results very close to the national averages.

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TABLE 7.1: AIR POLLUTION 1965-66

Mean daily concentrations (micrograms per c.c.)

Type of Site	Site	Smoke	Sulphur Dioxide
B2/E	Doncaster (Armthorpe Road)	126	134
	(national average)	(81)	(129)
B3	Barnby Dun	131	127
	(national average)	(90)	(93)
B3/E	Doncaster (Hall Flat Lane)	121	58
	(national average)	(58)	(113)
D1/E	Doncaster (Wood Street)	109	159
	(national average)	(103)	(239)
D2	Askern	100	175
	Bentley	146	177
	Thorne	100	N/A
	(national average)	(97)	(112)

Note:- See Appendix F for further details.

RIVER POLLUTION

218. The main watercourse in the study area is the River Don which is polluted throughout its length in the study area and is heavily polluted in places; similarly the River Dearne and part of the River Went and the Sheffield and South Yorkshire Navigation are all polluted. There is considerable local interest in cleaning up the River Don and its immediate surroundings with a view to developing its potential for recreational use. The tributaries of the Don and Dearne are, by and large, clean as are most of the dykes in the Adwick-Bentley area. South of the River Don virtually all the rivers and drains in the study area are lightly polluted and require improvement.

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SUMMARY

(i) Doncaster and the mining villages have a predominantly 20th century character. Outside the developed areas the landscape can be divided into a rather flat and uninteresting eastern part and an attractive and often well-wooded western part.

(ii) There is a continuing problem of derelict, spoiled and degraded land.

(iii) Outdoor recreation facilities are sparse at present. There is, however, potential for the provision of new facilities.

(iv) The climate is favourable in respect of temperature, rainfall and sunshine, but unfavourable in respect of wind speeds, cold damp conditions and fog.

(v) There are problems of both air and river pollution and some action is being taken to remedy them.

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8. LAND RESOURCES

SHORT-TERM SUPPLY

LAND FOR HOUSING

219. In the study area in 1966 about 1,600 acres of land were estimated to be available for building houses. This was land which was either allocated for residential use by the local planning authorities in the Town Maps for various parts of the study area, or which already had the benefit of planning permission. About two thirds of this land was available for private developers, while the remainder was earmarked for local authority use.

220. The total number of houses which this area could accommodste at the density envisaged (10-12 dwellings per acre) is about 17,000. In Chapter 6 an estimate was made of the future demand for bouses in the study area in the period to 1981. Depending on the assumptions made, the total requirement was estimated at 23, 500 extra houses. Land already allocated for housing development should therefore be adequate for the needs of the study area for some years to come. In addition, a further 300 acres were made available in Doncaster C. B. in 1968 and an extra 50 acres will become available following the redevelopment of areas of older, unfit housing. There is therefore no immediate problem insofar as the total area of land is concerned; but it is possible that shortages of land of a particular environmental quality or in a particular part of the study area will occur. However, it is unlikely that substantial new allocations of land will be necessary before the later 1970s unless the demand increases sharply.

LAND FOR INDUSTRY

221. In 1966, 712 acres of undeveloped land were allocated for industrial use in approved or unapproved Town Maps or had the benefit of planning permission.

TABLE 8.1: LAND AVAILABLE FOR INDUSTRY, 1966

Local Authority Area	Land allocated or with planning permission for industry 1966 (Acres)	Sites over 10 acres	
		No.	Acres
Doncaster C.B.	180	5	111
Adwick U.D.	145	4	134
Bentley U.D.	93	1	63
Doncaster R.D.	242	5	211
Thorne R.D.	52	2	36
Total Study Area	712	17	555

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222. In Doncaster C.B. about half the land was in the Wheatley area, north-east of the city centre, and the remainder was scattered on the north and west sides of the town. Much of the land was held in reserve by existing users (see para. 225) or required major services or clearance. An additional 410 acres are considered suitable for industrial use in the C.B. but are not allocated for that purpose. The two largest areas of land available for industry in Doncaster R.D. are at Kirk Sandall (97 and 73 acres). Smaller sites are at Armthorpe, Barnby Dun, Branton, Edlington and close to Thurnscoe. Bentley U.D. has one large site of 63 acres to the south-east of its shopping centre, and the remaining acreage is scattered through the urban district. Adwick U.D. too, has one large site of 87 acres at Red House Lane, with a further 17 acres at Carcroft. In Thorne R.D. 24 acres of land are situated at Dunscroft, and the remainder in Thorne itself.

223. Table 8.1 shows that three-quarters of the land is available in sites over 10 acres in size, there heing 17 such sites comprising 555 acres in all.

224. Much of this land however requires major services or clearance hefore it can he used. In March 1969 in Doncaster C.B. there were only 28 acres which could he developed immediately and a further 50 acres which will hecome available during the year. Outside the borough there are about 212 acres of land immediately available; 97 acres at Kirk Sandall, 30 acres each in Bentley U.D., Adwick U.D. and Thorne R.D., 15 acres at Ediington and 10 acres at Thurnscoe.

225. The industrial survey provides details of the site areas of manufacturing establishments already in the study area and their adequacy for the future needs of the firms in question. Of a sample of 46, 38 firms said that their present sites were adequate. 35 firms indicated that they had space for expansion if required, totalling 471 acres; much of this land is included in Table 8.1. Their replies suggested that the great majority have enough land to meet their requirements for many years. 15 firms provided estimates of their land requirement in the period to 1971 and 11 firms made a forecast for the period 1971-81. The total areas required amounted to only 27 and 28 acres respectively.

LONGER-TERM SUPPLY

226. There are very large areas of undeveloped land in the study area, and it is clear that it would he possible for new development to take place on a massive scale if this were necessary. The point at issue in this section is whether large-scale development could be carried out easily and economically or whether it would incur substantial penalties. The situation is complex and it is necessary to examine the study area in some detail. First, the factors influencing development are examined separately. They fall into four groups:-

(a) environmental factors
(b) conflicting resources
(c) transport factors
(d) engineering factors

A series of maps illustrates those parts of the study area affected hy the factors discussed. The sequence followed is hroadly similar to that of the text, although it is necessary to show separately those aspects which tend to inhibit growth (Figs. 11-15) from those which

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represent a positive advantage to development and which may therefore be regarded as resources (Figs. 16-17). A very simple system of evaluation is used, each factor being classified according to whether it is considered likely to have a major or minor effect on development. This enables an analysis to be made of the overall effect of the factors on the study area (paras. 264-285). The approach used is based on the principle of identifying costs and benefits but it has unfortunately not been possible in the time available to quantify them more precisely.

ENVIRONMENTAL FACTORS

227. The environmental factors fall into three groups:-

(i) Landscape restraints, affecting areas which are important to the environment of the study area as a whole, by virtue of either their intrinsic landscape quality or their being exposed to view. As it is felt that building in these areas might be harmful these factors are regarded as restraints on growth.

(ii) Favourable factors, affecting areas which would provide a pleasant environment for new development, or which offer other environmental benefits, but which are not so outstanding that they merit inclusion in group (i).

(iii) Poor Environment. This group consists of factors which would make the provision of a good overall standard of environment difficult or expensive.

LANDSCAPE RESTRAINTS

228. Particularly Attractive Landscape. The landscape quality of the areas indicated in Figure 11 is due to a varied topography with a liberal amount of woods, spinneys and bedgerow trees. These areas are designated "attractive" and fall into the middle and largest of the five categories in the West Riding County Council's draft landscape quality survey - the top two categories being for areas of "exceptional" and "great" landscape value and the bottom two categories for "featureless" and "blighted" areas. The Nottinghamshire County Council has not assessed its landscape in a similar manner, but most of the undeveloped land in Harworth parish (north of Harworth village and Bircotes) which is pleasant and well wooded, might also qualify for inclusion in the "attractive" category.

229. Conspicuous Open Areas. These are areas of land, not necessarily high land, which are almost devoid of the trees and woodland which would otherwise enable development to be satisfactorily integrated into the landscape. Such areas exist around Hampole, Barnsdale Bar, Marr and at Conisbrough Parks. Also included are the "crest zones", which are areas made prominent by a sharp change in gradient. These are subject to the West Riding County Council's policy that development that breaches the sky line should be restricted.

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230. Motorway Visual Corridor. This is the area of land within view as one travels along the motorways, in this case the M. 18 (existing and proposed) and Doncaster By-pass. The County Council's reclamation programme concentrates on the clearing-up of dereliction within potential growth areas, in the vicinity of strategic industrial sites and within the visual corridors of motorways. By these means it is intended to improve not only the county's but the region's image, thus helping the area to attract new industry and population, and retain the existing population. In view of this, the motorway corridors have been defined as areas in which a high standard of development should be required.

231. Steep Slopes. Also shown in Figure 11 are areas of steeply sloping land which would be difficult to develop. Although development can take place on slopes as steep as 1 in 4, special constructions entailing higher costs are usually needed. A gradient of 1 in 10 has been chosen as critical. The areas affected are mainly narrow strips of land at the outcrop of the Magnesian limestone in the western part of the study area.

FAVOURABLE FACTORS

232. Well-wooded Landscapes. An abundance of trees softens the otherwise stark appearance of large areas of development and makes for a very much more attractive environment. Of the areas shown in Figure 16, those to the west and south of Doncaster are particularly significant as they are situated in the more elevated parts of the study area, whereas the well-wooded areas to the east are rather flat and low-lying.

233. Recreation areas. Figure 16 also shows areas which have existing outdoor recreation facilities, or which are considered to have some potential for recreational development.

234. Areas already dominated by urban development - (Figure 17) - are also regarded as a resource because new development would incur no significant loss of amenity and, indeed, could well improve the general environment of the area.

POOR ENVIRONMENT

235. Unattractive Areas. Certain parts of the study area are so flat and featureless that they would tend to provide a very depressing environment. Two large areas are shown on Figure 12; the sector north of Doncaster and to the east of the Doncaster-Selby railway line; and Hatfield Chase.

236. Dominance of Unsightly Features. The largest area affected is near the tip at Malthy Colliery, itself outside the study area. Almost as large is the area dominated by Rossington tip from Rossington to Wadworth and stretching southward almost to Tickhill. The tip is invisible from the village of Rossington because of a vital belt of woodland dividing the two. At Askern the most unsightly feature is not so much the tip as the smokeless fuel plant which affects land mainly to the north-east and south-west. The various other unsightly features affect only quite small areas and could be minimised by relatively minor work.

237. Mineral Working Nuisance largely arises from the noise, dust and fumes and general unsightliness of limestone quarries (and of lorries travelling to and from them) in the west of the area. Those at Stainton and Warmsworth/Cadeby are particularly

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significant at present but it should be borne in mind that the potential for an extension of working exists along the whole of the limestone ridge, especially at any existing quarry which might be re-opened to meet growing mineral markets.

CONFLICTING RESOURCES

AGRICULTURAL LAND

238. The assessment of the quality of agricultural land is based on the Ministry of Agriculture's five-fold classification:-

Grade 1. Land with very minor or no physical limitations to agricultural use and a high degree of cropping flexibility.

Grade 2. Land with some minor limitations which exclude it from Grade 1.

Grade 3. Land with moderate limitations due to acid soil, relief or climate or some combination of these factors.

Grade 4. Land with severe limitations due to adverse soil, relief or climate, or a combination of these.

Grade 5. Land with very severe limitations.

239. It is convenient to divide the study area into four broad agricultural areas:-

(a) The northern area bounded by the River Don on the south side and by a line from Askern to Doncaster on the west. The soil here is a poorly drained clay loam (or silty clay loam) over clay, with a high water table. Even moderate rainfall produces water-logging and surface water takes a long time to disappear. Plant food on land of this nature is generally plentiful but cannot always be fully utilised by the plant because of the wetness which makes the land late and cold in spring. For this reason few arable crops are grown and the tendency is towards grassland which does not suffer quite so badly from wet conditions. However, treading in of the sward by stock during these periods causes wastage and a poor recovery rate. To assist production further work could be done by both the farmer and the Internal Drainage Board on an improved field and main drainage system. A drainage scheme including pumping is currently being developed for the valley of the River Went. In addition, the area would benefit from more capital invested in farm buildings and other fixed equipment. The area is classified Grade 3 in the Ministry of Agriculture's classification.

(b) The Magnesian Limestone Ridge. This area is well drained and largely devoted to the production of cereals, potatoes and sugar beet, with some dairying. The area is capable of adjusting to changing conditions and maintaining and increasing output and is classified Grade 2.

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(c) The north-east area (i.e. most of Thorne Rural District east of the River Don). This is grade 2 land of the artificial warp type which in places approaches grade 1 level and produces excellent crops of cereals, potatoes and sugar beet. The farms are well equipped with modern farm buildings. This area is certainly the best and most versatile as regards choice of enterprise.

(d) The south-east area stretching from Kirk Bramwith to Bawtry. The soil here is generally of a light sandy nature classed grade 3. It is hungry soil which needs substantial applications of fertiliser to maintain yields, but the area is well farmed. Cereals (especially barley) and root crops predominate. At the northern end of this area, between Barnby Dun, Stainforth, Kirk Bramwith and the A.18, a recent survey has ahown that the soil is in the Newport series - a aandy loam underlain by slightly impeded drainage. This juat qualifies as Grade 2.

240. Areas of Grade 2 agricultural land are shown on Figure 13 as a major conflicting resource. Thia is very good land and it is desirable that as little as possible should be taken out of agricultural use. Figure 13 also showa areas of commercial woodland, i.e. areas of Forestry Commission woodland or woods under a Dedication Covenant where the trees are grown for commercial purposes. Because of the time involved in the maturing of the wood the areas involved are at the very least a factor influencing the phasing of development.

SURFACE MINERALS

241. Figure 13 shows areas where development would conflict with the exploitation of reaources of surface minerals. Of theae, aand and gravel are the most critical; the economic significance of the large sand and gravel field in the study area was underlined in Chapter 3. It lies to the east and south-east of Doncaster and there are two types of deposit. North of the River Torne are thin deposits usually 6 to 8 feet thick which are variable in quality. South of the Torne the depoaita are of high quality quartzite pebbles and are much in demand. Bearing in mind the demand for the mineral and the general quality of the deposits the whole area should be aubject to careful examination before any sterilisation by development takes place. Limestone is regarded as an important resource in those areas where it is currently worked and particularly in the area around Cadeby where there occurs a rare dolomite used, for example, in the manufacture of glass (see para. 80). Brick-clay is alao of some importance in scattered sites.

242. Other factors shown on Figure 13 are the safety zone around the explosives magazine at Dunsville and two large areaa of peat on Thorne Waate and Hatfield Moors.

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TRANSPORT FACTORS

ACCESSIBILITY

243. An examination has been made of the extent to which different parts of the study area will benefit from:-

(a) accessibility from motorway junctions
(b) proximity to labour
(c) proximity to the centre of Doncaster

For the first two of these three headings the route of the M.18 and the locations of junctions along it are obviously important. Unfortunately neither the route of the motorway between Wadworth and the Thorne By-Pass nor the location of the junctions on this length is yet fixed, and assumptions have had to be made both about the likely route and about the probable location of junctions.

244. Accessibility from Motorway Junctions. Proximity to a motorway access point is seen as a significant advantage by many industrial and commercial undertakings. Figure 16 shows those areas within ten and twenty minutes' travelling time by heavy lorries from existing and possible future motorway access points in the study area.

245. Proximity to labour. In order to assess the relative advantages of different parts of the study area as regards the proximity of labour, estimates have been made of the present labour supply within 20 minutes and 30 minutes travelling time (by car) of selected points (Table 8.2). Two measurements of the labour force are made: first, total population (of which about half can be assumed to be economically active), and secondly, colliery manpower. Over the study area as a whole it is expected that colliery manpower will fall by over 30% in the period 1967-1975. It is not possible to assign this reduction to individual pits but the results at least show that it is likely that more men will become available for other employment within reach of say, Adwick or Edlington than in Auckley or Edenthorpe. Indeed, there is a fairly consistent pattern running through all four sets of results, i.e. the greater accessibility to labour supplies of locations to the north west and south west of Doncaster, with catchments about twice the size of those to the east. This contrast would have been far greater were it not for the beneficial effect upon the Thorne area of the proposed extension of the M.18.

246. It should be noted that this exercise is based on private car usage. Although similar labour catchments could be tapped by a future bus system, the results take no account of the importance of the existing system of public transport. An exercise carried out on this basis would undoubtedly show that the town centre of Doncaster had by far the greatest labour catchment. As is shown in the following chapter, the bus system of the study area is highly concentrated upon the centre of Doncaster which is a terminus for practically all routes.

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TABLE 8. 2: PROXIMITY OF SELECTED LOCATIONS TO PRESENT SUPPLIES OF LABOUR (Assuming completion of the M. 18 to Cowick)

Thousands

Location	Population within 20 minutes travelling time (car)		Population within 30 minutes travelling time (car)	
	Total Population 1961	Colliery Manpower 1967	Total Population 1961	Colliery Manpower 1967
Marr	362	42	617	54
Red House Interchange	359	39	651	58
Edlington	339	32	715	55
Carr Hill	245	31	611	55
Doncaster (town centre)	234	29	597	49
Wheatley	197	18	442	41
Bentley	196	26	572	48
Harworth	182	18	500	43
Edenthorpe	167	9	278	18
Rossington	166	17	647	43
Wadworth	161	14	542	45
Thorne	157	11	286	24
Askern	143	16	463	42
Auckley	129	8	602	37

Note: The following speed assumptions have been used: 50 m.p.h. on motorways; 30 m.p.h. on rural roads; and 15 m.p.h. in built-up areas.

247. Proximity to the centre of Doncaster is also significant because of the social importance of living near to a sizeable entertainment and shopping centre. In the third exercise, those areas which are within 15 and 30 minutes travelling time of the town centre by bus have been defined (see Figure 17), allowing for five minutes walking and waiting time. Travel by train is also included but affects only small areas around the stations at Stainforth and Thorne.

TRANSPORT RESTRAINTS

248. Figure 14 shows the impact upon the study area of three restraints connected with transport. Two of these include references to airfields and for this purpose we have included the site at Thorne Waste which bas been reserved for a possible future international airport.

249. Height Restrictions apply to development in the vicinity of the R. A. F. airfields at Finningley and Lindholme and are a major part of the safeguarding proposals for the Thorne Waste site. Beyond the public safety zones close to the runways (where no obstruction can be allowed) there are areas with restrictions on the height of obstructions of 35 feet, 50 feet and 150 feet. The 35 feet zones and public safety zones have been

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included in the sreas shown. A comparatively small ares adjacent to the Doncsster Airfield (next to the racecourse) is also subject to height restrictions.

250. Noise. Assumptions have been made as to the noise levels which it would be reasonable to accept in the vicinity of the motorways and the sirfields. The aress affected by an unacceptable level of noise are shown in Figure 14. In respect of the route of the M.18 from A.1(M) to the Thorne By-psss, the affected aress are shown for the two most likely alternative routes. Generally a strip about 900 feet wide on esch side of a motorway is affected, but the width on one side can be as much ss 1,900 feet. The areas adversely affected by aircraft noise vary with the type of aircrsft, so that the possible air traffic using the proposed Thorne airport would affect a larger ares than do the R.A.F. aeroplanes using the airfields at Finningley and Lindholme. This fsctor is particularly relevant to residential development. Where industrial development is concerned there is no agreed limit to the acceptable level of noise, but it is likely to be slightly higher than for housing areas.

251. Very Poor Access. Also indicated on Figure 14 are areas which suffer from very poor access and which could not be developed without expensive new investment in bridges and substantial new lengths of road. Such areas are defined msinly by long lengths of waterway, railway or motorway without a crossing point. A distance in excess of ½ mile from a metalled crossing bas been taken ss a criterion. Narrow roads, narrow bridges, railways level crossings and swing bridges also contribute to poor sccess. The largest area affected is the sector north of Doncaster between the River Don and the Doncaster-Knottingley railwsy line. Another large area is to the south of Doncaster and west of Rossington.

ENGINEERING FACTORS

SURFACE DRAINAGE AND SUBSIDENCE

252. For drainage purposes, the study area is administered by two River Authorities; the Yorkshire Ouse and Hull River Authority covering the north-western half of the study area and the Trent River Authority covering the south-eastern part. Many of their powers in respect of drainage are, however, delegated to the Internal Drainsge Boards. Such Boards are only established in low-lying districts where drainage is a particular problem. It is their function to maintain, clean, repair and improve existing works, remove obstructions and construct new works. Fifteen internal drainage districts fall wholly or partly within the study area and together cover 50% of the study ares.

253. The two River Authorities have sub-divided their portions of the study ares and bave made observations on the surface drainage characteristics of each sub-division. Of the seven sub-divisions lettered A-G in Figure 15, the most suitable for development on drainage grounds are those in the west of the area. In effect the drainage problem worsens from south-west to north-east in the study area. This pattern also spplies (although tbe contrast is less) to the problem of drainage from sewage disposal works.

254. In the lowest-lying parts large-scale development would involve both costly new pumping installations and extensive improvements to the system of water courses. In addition there are dangers of flooding and the problem is exacerbsted by subsidence due to mining operstions. In these low-lying areas s relatively small drop in the height of the surface can make a very profound impact on drainage. It is likely, however, that

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the greatest effects of mining subsidence will be felt in the west of the study area rather than in the low-lying eastern parts. Nevertheless, major new drainage works will be needed in some areas liable to subsidence merely to retain the land in agricultural use. Such works are the responsibility of the National Coal Board, but that responsibility does not extend to providing for any increase in the rate of flow attributable to major new development.

255. Even in the more favourable western part of the study area there is a drainage problem in that large-scale development would result in an increased run-off which would tend to overload the system in the low-lying parts of the area. To overcome this problem it would probably be preferable to construct balancing reservoirs to limit the maximum rate of run-off to the capacity of the drainage system rather than enlarging pumping stations and many miles of arterial drains. This incidentally creates a valuable opportunity to provide a large area of inland water for recreational purposes, a possibility referred to in para. 206.

256. In view of the importance of the drainage problem in this area, information has been obtained on the range of costs which would be incurred by new urban development. These costs relate to the removal of surface water only from the edge of major development sites (including pumping costs). The range of costs in this country is unlikely to fall below £20 per acre of development or rise above £500 per acre. The study area itself possesses areas which lie near both extremes of this range although it is likely that average drainage costs will be higher than a hypothetical national average. The maximum difference in cost between an easily drained area and a difficult area is of the order of $1\frac{1}{2}\%$ of total construction costs for urban development.

257. In addition to its effect on surface drainage, subsidence has a direct effect on development in that in areas over seams still to be mined major developments (such as town centres and large industrial structures) are subject to serious constraints of structure and design. In such cases it is often preferable to buy from the National Coal Board the unworked seams of coal beneath the structure and leave them as pillars of support. In the case of other forms of development - such as low density housing - there are no technical difficulties in developing over unworked seams provided the ground conditions are fully investigated. Subsidence problems can be avoided if the development programmed is co-ordinated with the coal extraction programme. There are, however, difficulties in areas which are underlain by more than one workable seam of coal, and some information on the areas likely to be affected in this way has been obtained although it has not been mapped.

258. No detailed appraisal of the way in which different parts of the study area are affected by the subsidence problem has been carried out for this study. The situation calls for an engineering study which would examine subsidence as part of an inter-related group of problems which also include surface drainage, underground water supplies and the level of the water table. This last item is important for its effect both upon agriculture and upon the potential of worked out sand and gravel pits for water recreation.

259. Land liable to flood. The area involved is considerable because much of the eastern part of the study area is below high tide level, and would thus be at risk if a breach or overtopping of riverbanks occurred. In addition there are areas unsuitable for building because of a risk of local flooding or a high water table. The areas affected are shown in Figure 15, as also are some areas of washland along the valley of the River Don.

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SEWAGE AND REFUSE DISPOSAL

260. Figure 17 shows areas which are or could be drained by gravity into existing drainage systems or by systems for which an improvement scheme is in hand. Development in these areas would clearly be less expensive on account of the reduced need for sewerage.

261. Some sewage disposal capacity able to serve large-scale residential or industrial development will become available after 1971, and in this respect the study area is better equipped than many other parts of South Yorkshire. Much of the work being carried out is required to improve the quality of the effluent. The River Authorities are now insisting on a high standard of effluent in order to reduce river pollution in an area where the gradients of the rivers and streams are slack, and where much of the effluent is discharged into quite small streams. High standards of treatment and the necessity to pump sewage where the terrain is mainly flat both tend to raise costs in this area.

262. In the industrial survey, only seven firms (employing 8,300 people) out of 51 were dissatisfied with effluent disposal facilities. However, the disposal of the sludge from sewage works is becoming a problem, particularly where industrial waste is involved, and an early study of the possibilities of a joint disposal scheme and of alternative methods of sludge disposal is desirable.

263. Refuse disposal poses no immediate problem in the study area so long as controlled tipping continues to be accepted in the environment but again an early examination of the possibility of a joint disposal scheme and of alternative methods of disposal would be helpful, particularly if any large development is to be undertaken.

NALYSIS BY SECTORS

.64. In order to summarise the resources and restraints on the supply of land in the longer-term, the study area (together with Tickhill U. D. and the parish of Harworth) has been divided into nine sectors (see Fig. 18). The boundaries between sectors are strong physical barriers which are unlikely to bisect any major new unit of development. Of the alternative lines of the proposed Doncaster Southern By-Pass (M. 18), the south-eastern route has been chosen as a sector boundary as it seemed the most appropriate for this purpose.

265. The contents of Figs. 11-17 are summarised in Fig. 19. It must be emphasised that the factors shown are classified into resources and restraints according to the possibilities or problems they pose for urban development. This is also the basis of the division of both resources and restraints into major and minor factors. A simple scoring system (see the key to Fig. 19) enables a rough evaluation to be made of the overall impact of the factors throughout the study area. The two factors which have not been mapped - the areas affected by coal-mining (including the working of two or more seams in one locality) and proximity to labour - are mentioned in broad terms as appropriate in the following paragraphs. Where a part of a sector is likely to be suitable for development, its name has been underlined.

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SECTOR 1

266. This is an area of about 18,000 acres, lying west of the A. 1 and A. 1(M) and north of the Don. The western third of the sector is part of the exposed coalfield, which here remains relatively unspoilt. The land rises sharply to the Magnesian Limestone belt further east, and then falls away gradually, although gently undulating.

267. In the western third of the sector (5 - 6,000 acres), the landscape is attractive, but less so than the limestone belt further east. Those parts away from the scarp slopes might be regarded as suitable for urban development if the area could be considered in isolation. Here, however, much depends on potential for expansion in the string of towns (from North Elmsall to Conisbrough) lying immediately across the study area boundary. Investigation into such potential is outside the scope of this study, and therefore this question must remain open at this stage.

268. The assets of the eastern (limestone) part of this sector lie in its greater proximity to motorway access points and to supplies of labour (particularly from the mining communities) and its recreational potential. However this part of the sector is subject to important landscape restraints, and most of the limestone supports high grade agricultural land. In addition, the potential value of the limestone as a mineral resource cannot be ignored, while the eastern half of the sector is likely to have the greatest concentration of multi-seam coal-working of any part of the study area. This combination of factors exerts a powerful restraint on urban development.

SECTOR 2

269. This sector, lying west of the A. 1(M) between the River Don and the M. 18, includes the south-western end of the axial belt of urban development running north east - south west (Warmsworth and New Edlington), together with about 5,500 acres of rural land. In geological and topographical terms it is akin to Sector 1, the exposed coalfield and the limestone belt here being roughly equal in area.

270. This sector benefits from the advantages of proximity to the A. 1(M) (particularly at the eastern end) and to labour supplies. Urban development around New Edlington could probably make a contribution to major expansion in the study area, but further south-west any expansion would have to be closely related to the needs and potential of Conisbrough and Malthy, both outside the study area. This sector emerges with better prospects for urban development than Sector 1, partly because the limestone occupies a smaller proportion of the area and partly because the influence of the existing urban settlements in the east tends to offset the landscape restraints associated with the limestone. Another important contrast is that multiseam extraction of coal is unlikely to occur here.

SECTOR 3

271. Sector 3 has an area of over 10,000 acres, and lies south of M. 18 and west of A. 1(M); most of Tickhill U. D. (outside the study area proper) is included in this sector. The area is almost entirely within the Magnesian Limestone belt, although in terms of long-term land availability there are some differences between east and west.

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272. Better access to Doncaster central ares and the existence of well-wooded landscapes (around Wadworth) probably render the northernmost part of the sector the most suitable for development, although overall the sector hss a relatively smsll potential. Possibilities msy also exist in the area west of Tickhill, but msjor expansion here would have to be closely related to Malthy just over the study area boundary. As in Sector 1, however, restraints tend to dominate over resources for development. Grsde 2 agricultural land covers about three-quarters of the sector, while in the west there are additional problems caused by the influence of limestone working and of Maltby Colliery spoil heap (itself just outside the study area). Problems are easier further esst, althougb around Tickhill multiseam coal working might pose problems of phssing.

SECTOR 4

273. This is that part of the study area north of the River Don and between the A. 1(M) and the Doncaster - York railway line. It includes the northern axial belt of urban development radiating from Doncaster together with about 15,000 scres of rursl land. The Askern - Bentley string of settlements is not only an important element in the existing urban pattern, but also marks the boundary between the limestone on the west and the flat clay lowlands on the east.

274. This sector may be divided into four. Firstly, resources appear stronger than restraints in the immediate Adwick - Bentley area, its major sdvantage lying in its ready access both to the motorway system and to Doncaster town centre. Multi-sesm coal working may be a problem west of A. 638. Secondly, immedistely west and south-west of Askern, restraints have less intensity, but accessibility remains good, giving this area some possibilities for expansion. Thirdly, in the east (i. e. in the belt due north of Bentley), poorer accessibility, unattractive landscapes and flood risks give restraints the upper hand again. Fourthly, in the north west, despite good sccess to the motorwsy system and proximity to labour supplies, restraints are strong, in particular conspicuousness, attractive landscape and good agricultural land.

SECTOR 5

275. This sector contains nearly 14,000 acres of rural land between the A. 1(M) and the A. 638 south of the Don. The limestone outcrops in a belt $\frac{1}{2}$ - 1 mile wide in the west and the rest of the area consists of well-wooded, dry sandy areas (witb frequent sand and gravel workings) falling to lower, flatter, wetter carr lands.

276. The position in regard to the suitability of land for development is as varied ss the topography, for this sector offers an intricate mixture of problems and opportunities. In the north possibilities of good access to motorways and to Doncsster itself are partly offset by the physical barriers existing in the area. The low clay areas (e. g. west of Rossington) present flood risks. The Rossington-Bawtry - Harworth ares (extending into Nottinghamshire) offers considerable recreational potential, but the lstter must be considered in close conjunction with sand and gravel working, while the attractiveness of the landscape must be regarded as requiring a higher standard of urban development. Multi-seam coalworking is unlikely to occur in this sector, except possibly in the extreme south. The major possibilities for urban expansion here seem to be Doncsster Carr (industrial) and within the Rossington - Bawtry - Harworth area (possibly with s strong commuter element).

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SECTOR 6

277. This sector lies between the Doncaster - York railway line in the west and the River Don in the east. Apart from Thorpe Marsh Power Station, the 16,000 acres of this sector can he regarded as rural in character. Topographically the area is a fairly uniform extension of the flat clay plain which forms the eastern part of Sector 4.

278. The long-term land position here is, not unexpectedly, the most uniform of all sectors. Over most of the sector, restraints are dominant and this is particularly the case in the extreme north-east where excessive noise levels which might arise if a Goole/Thorne Airport were constructed reinforce the restraints created by access problems and a landscape rather more attractive than on much of the clay plain. In the Fishlake area relatively good access to a proposed interchange on the M. 18 extension tends to offset the restraints here, in this case notably floodland. The uniform character presented by the remainder of the sector as shown in Fig. 19 conceals some variation in the restraints operating with a part being played in various areas by unattractive landscape, flood risks and poor access. Although coal-mining is unlikely to present major prohlems, it must be concluded that scope for urban expansion is limited in this sector.

SECTOR 7

279. This sector lies between the River Don, the proposed extension of M. 18 (the southern alternative heing chosen simply for convenience) and the A. 638. No part of the sector is more than a mile from an existing urhan area, and urban areas cover nearly s third of the whole sector from the eastern part of Doncaster through mucb of the north-eastern axial belt as far as Stainforth. Topogrsphically the sector is similar to Sector 5.

280. For the most part resources dominate in this sector particularly in the area around and to the east of the Armthorpe - Barnby Dun belt of settlements. Good access to M. 18 and to Doncaster town centre are major resources here, and much of this sub-sector is indeed already dominated hy urban development. Parts of this area do bave sand and gravel resources operating as a minor restraint, but this may largely be regarded as a phasing problem and as a possible recreational resource. Phasing difficulties are unlikely to he created by multi-seam coal-working, so this central part of the sector must he regarded as one of the study area's most suitable areas for urban expansion from the physical point of view. Considerable potential for urhan expansion exists bere therefore, and important restraints are mainly limited to four areas. East of Stainforth, flood risks and the visual impsct of Hatfield Colliery are evident. Sand and gravel is an important conflicting resource south west of Dunscroft, while good agricultural land and flood risks combine south of Dunsville. Attractive landscape is the major restraint east of Bessacarr.

SECTOR 8

281. This is the largest of the nine sectors, with a rural area of 22, 500 acres. Bawtry in the extreme south is the major settlement. The sector lies east of the M. 18 extension (southern route) and hetween A. 18 and A. 638. Topographically, the sector is comparable with Sector S spart from the flat hog and low scrub of Hatfield Moors and the adjoining flat arable "warpland" of Hatfield Chase.

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282. Although accessibility to the motorway system is good both in the north-west and the south, this sector's potential must be seen largely in recreational terms (particularly in the area north of Blaxton). Major urban development, if it were to take place, would be likely to be restricted to the sector's western edges. The area where restraints are at their worst tends to coincide with the distribution of floodland which is very widespread in this sector. Height restrictions or aircraft noise in connection with R. A. F. Finningley, R. A. F. Lindholme and the proposed Goole/Thorne Airport also lie astride the centre of the sector in a belt often over two miles wide. Nearly all the sector is also subject to the important restraints of sand, gravel and peat reserves (although coal reserves are unlikely to pose multi-seam working problems). These problems are reinforced by the existence of good agricultural land in the extreme north (Hatfield Chase) and attractive landscape in the extreme south.

SECTOR 9

283. Sector 9, containing Thorne, Moorends and 13,000 acres of rural land, lies in the north-east corner of the study area, east of the M. 18 extension and north of A. 18. Topographically the area consists of much the same elements as Sector 8.

284. In this sector the only potential for expansion lies in the immediate area of Thorne - Moorends, which has better accessibility than the rest of the sector. Flood risks are virtually universal throughout the sector, and away from Thorne and Moorends height restrictions and excessive noise levels would result from the construction of an airport at Goole/Thorne, while much of the area not covered by peat is of good quality agriculturally. This last restraint also applies to much of the Thorne-Moorends area, but this part of the sector would not be affected by excessive noise.

285. This summary of the suitability for development of each sector of the study area suggests that all sectors except sectors 1, 6 and 8 could accommodate major expansion without any serious disadvantage being incurred. A total of 20,000 to 25,000 acres would be suitable for development and, if it were developed at an overall density of 15 persons per acre, could accommodate an additional 300,000 to 375,000 people. This means that a range of alternative structures accommodating an increase of up to 300,000 could be explored without major incursions being made into land which is seriously unsuitable for development.

SUMMARY

(i) There is a good supply of housing land immediately available which is likely to meet local needs for some years to come although the choice of sites providing a really high standard of environment is limited.

(ii) There is a good supply of industrial land for the shorter-term needs of industry. Many existing industries have sites with room for expansion and 17 sites of over 10 acres are available.

(iii) There are very large areas of undeveloped land in the study area. A detailed analysis of the many factors affecting development indicate that an extra 300-375,000 population could be accommodated without major incursions being made into land which is seriously unsuitable for development.

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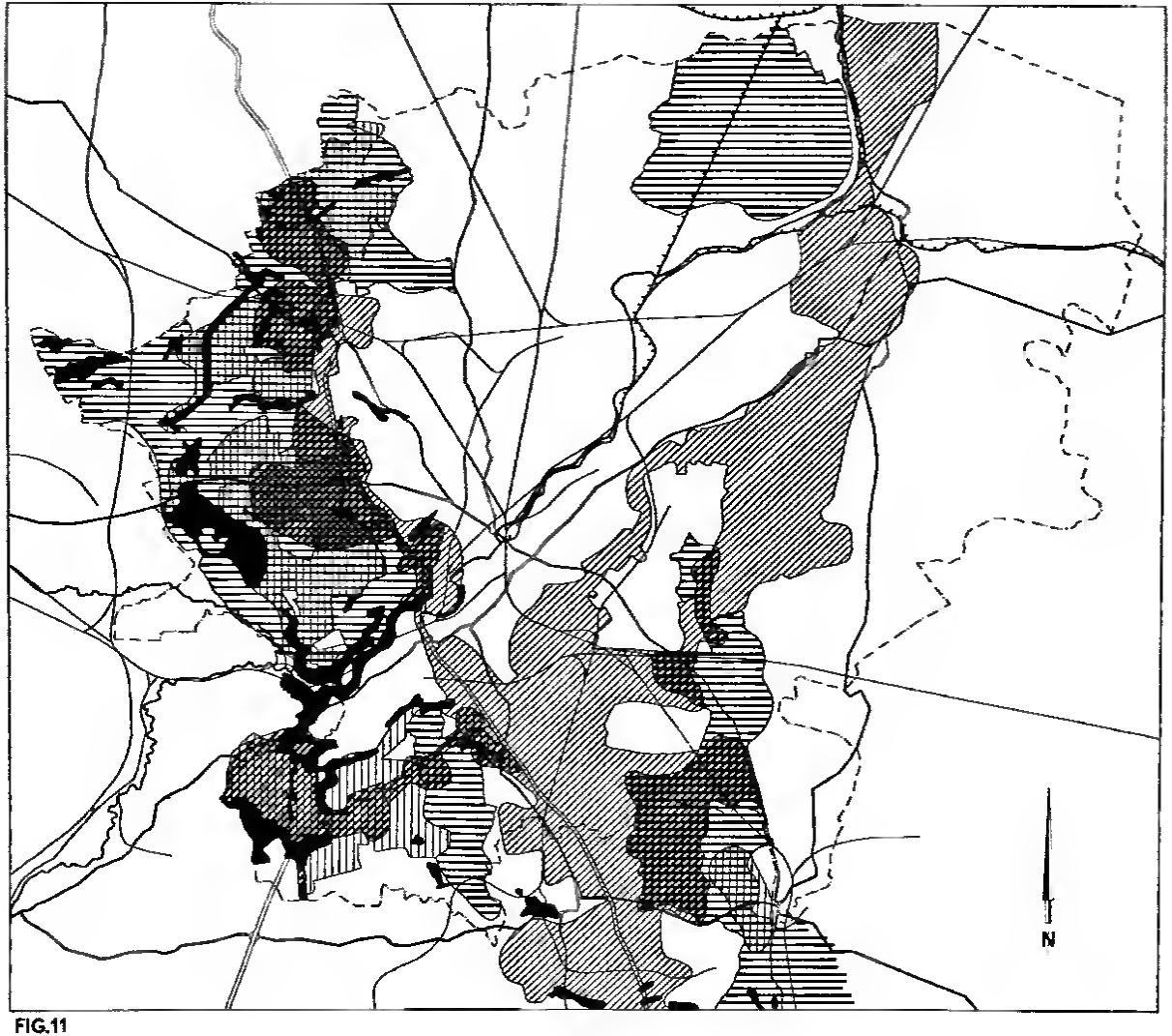

FIG.11

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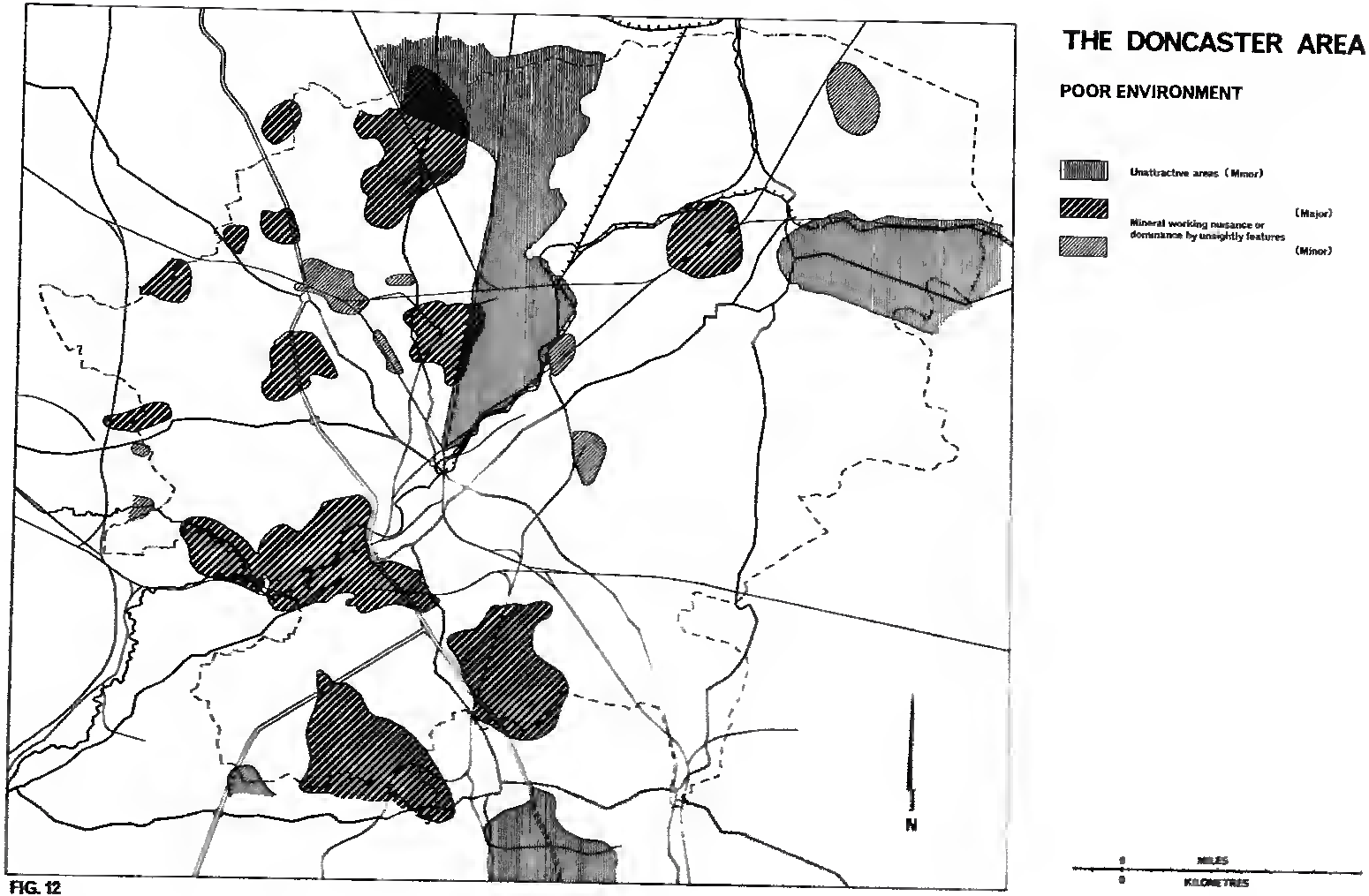

FIG. 12

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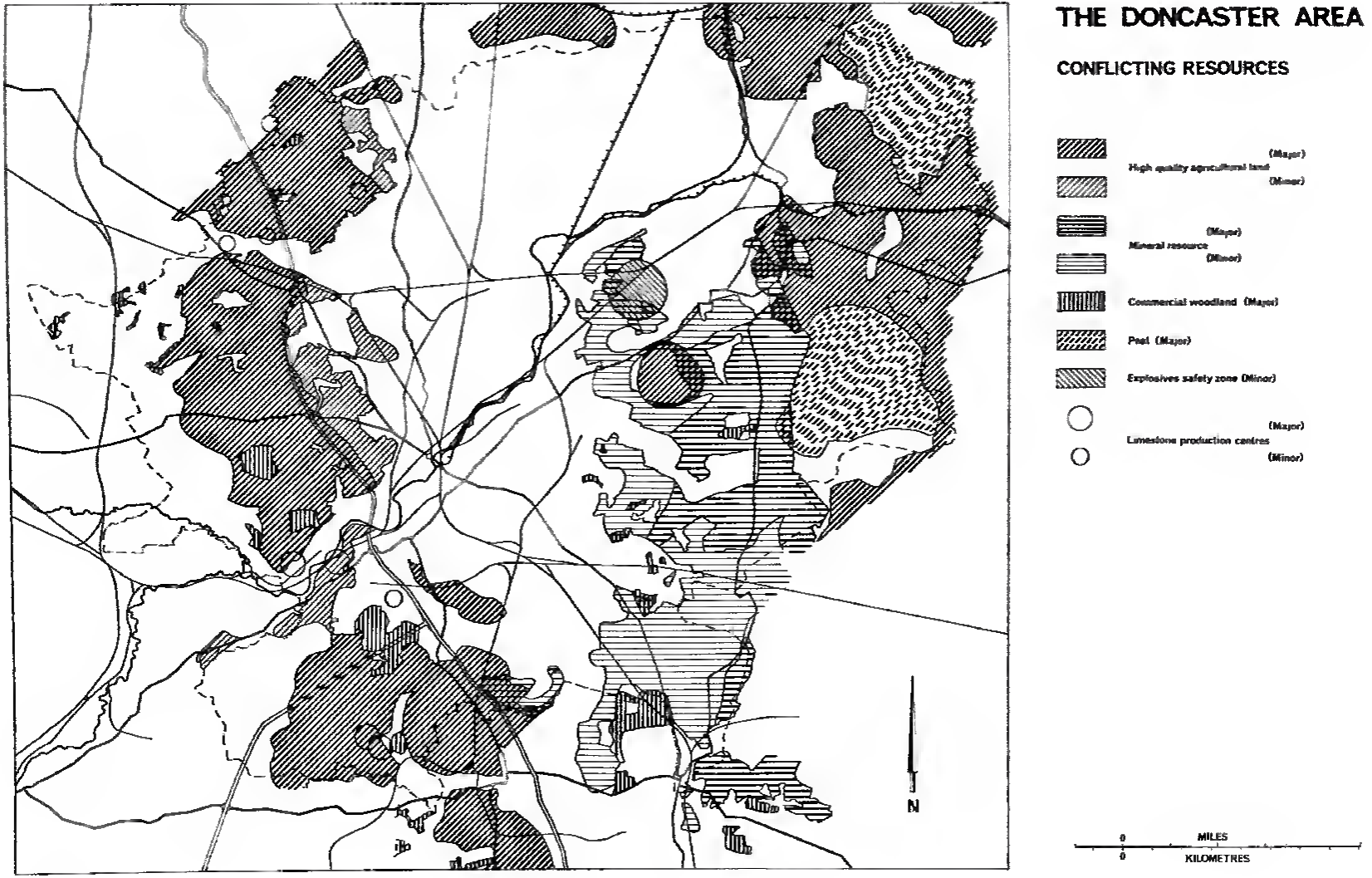

FIG. 13

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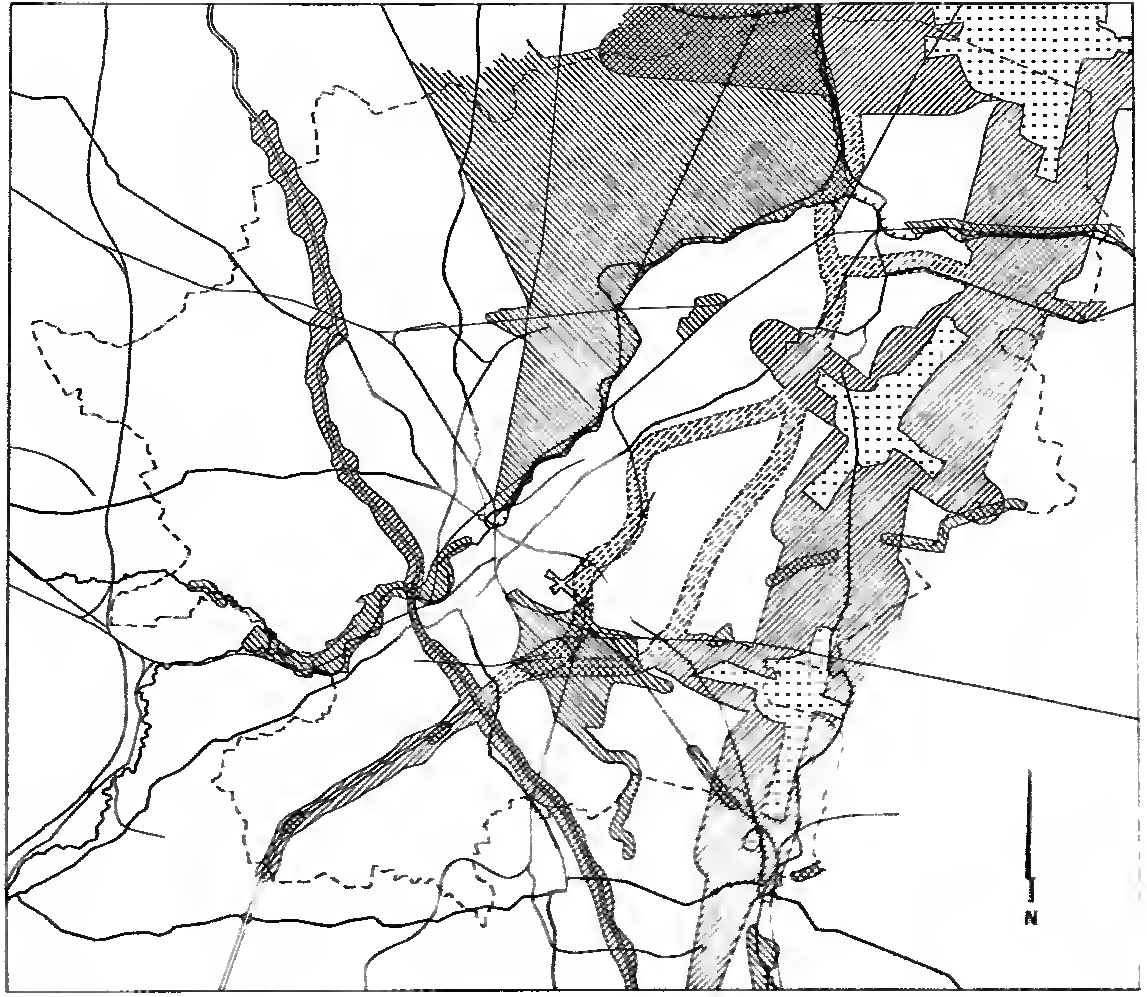

FIG.14

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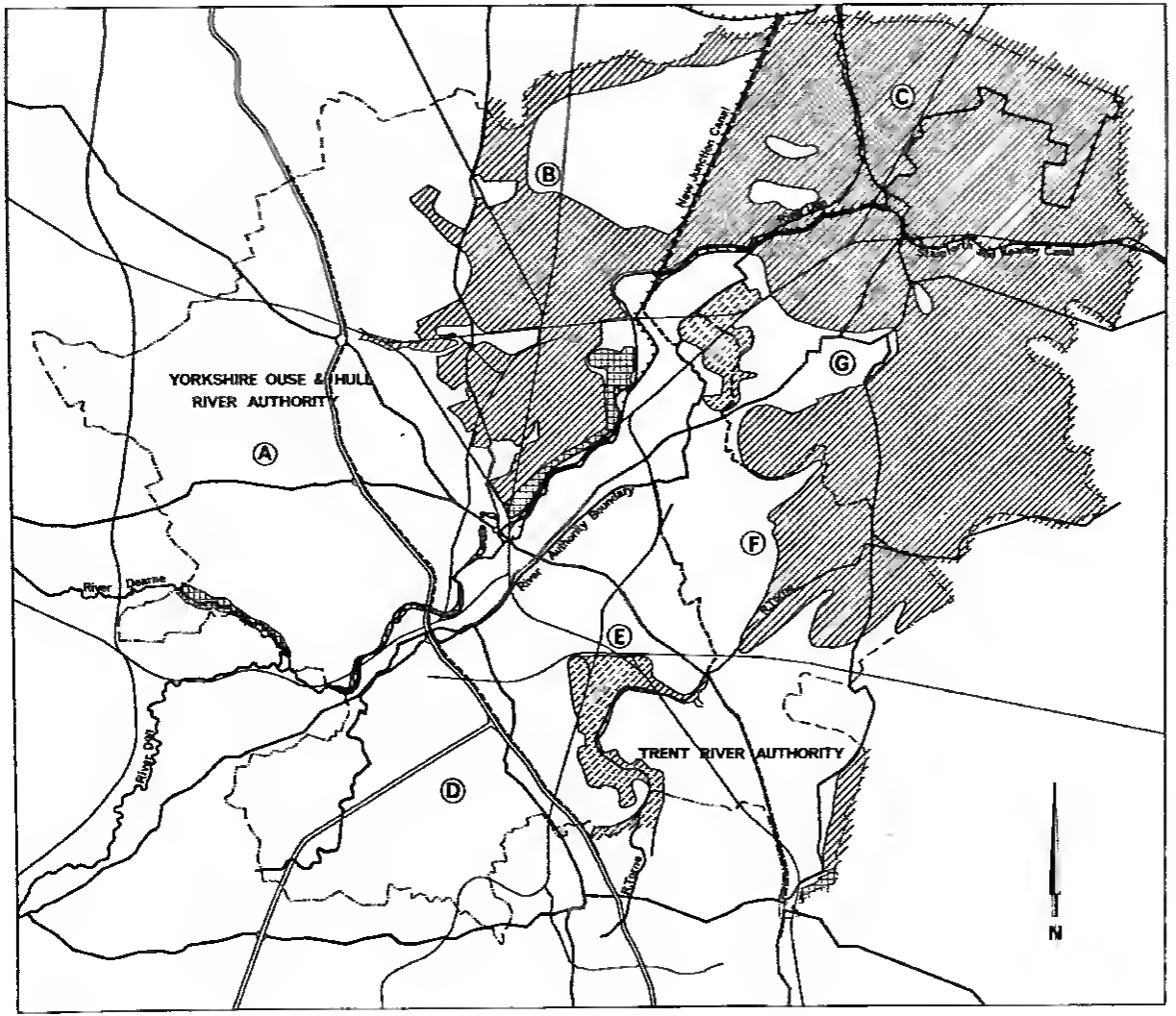

THE DONCASTER AREA

DRAINAGE

Land liable to flood (Major) (Minor)

Washlands

Sub divisions of drainage area

0 MILES
0 KILOMETRES

FIG. 15

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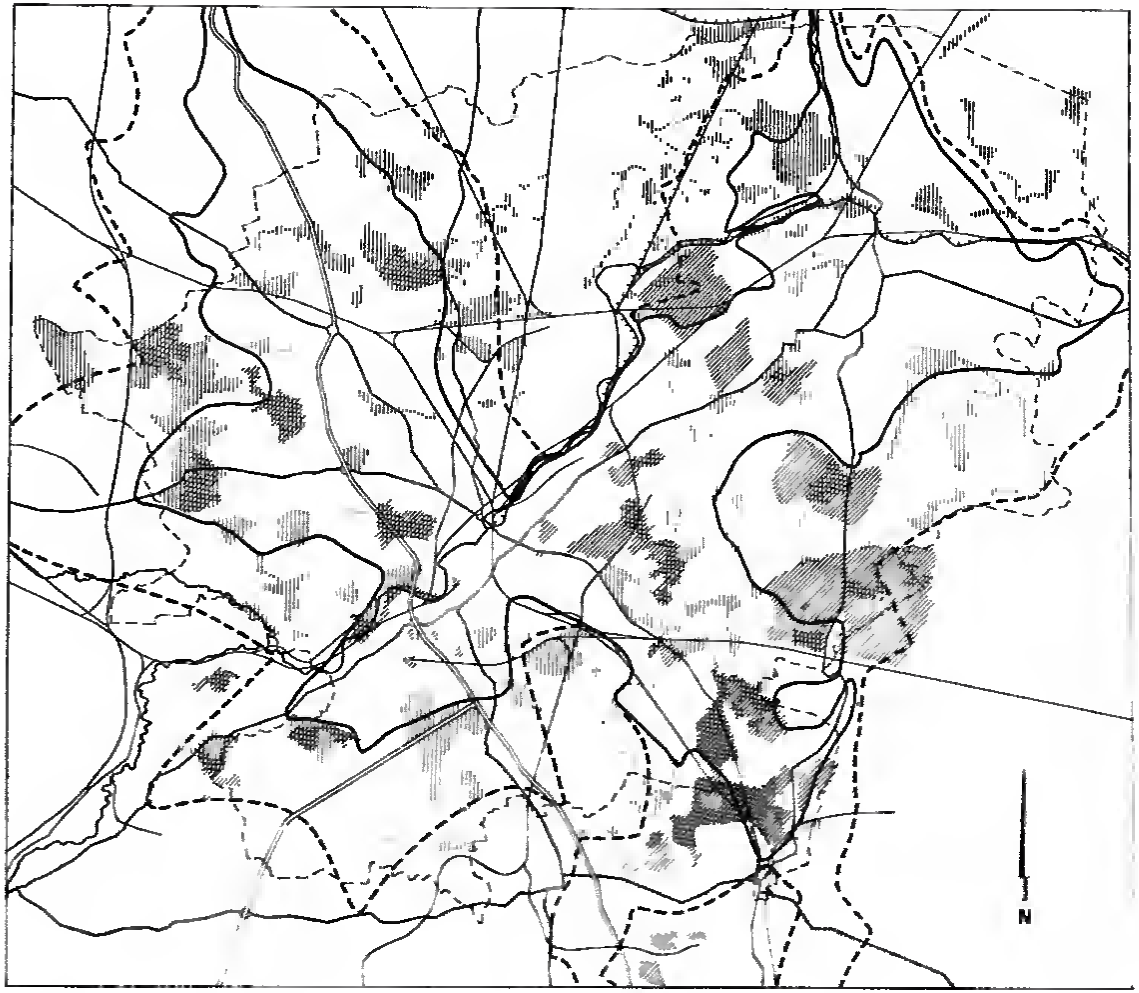

THE DONCASTER AREA

RESOURCES I

Well wooded landscapes (Minor)

Recreation areas (Major)

Access to motorway system within 10 minutes (Major)

Access to motorway system within 20 minutes (Minor)

0 MILES

0 KILOMETRES

FIG.16

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THE DONCASTER AREA
RESOURCES II
Sewage by gravity envelope (Minor)
Undeveloped areas already urban dominated (Minor)
Accessibility to Doncaster town centre by public transport in 15 minutes (Major)
Accessibility to Doncaster town centre by public transport in 30 minutes (Minor)
N
0
MILES
0
KILOMETRES

FIG.17

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THE DONCASTER AREA

SECTORS

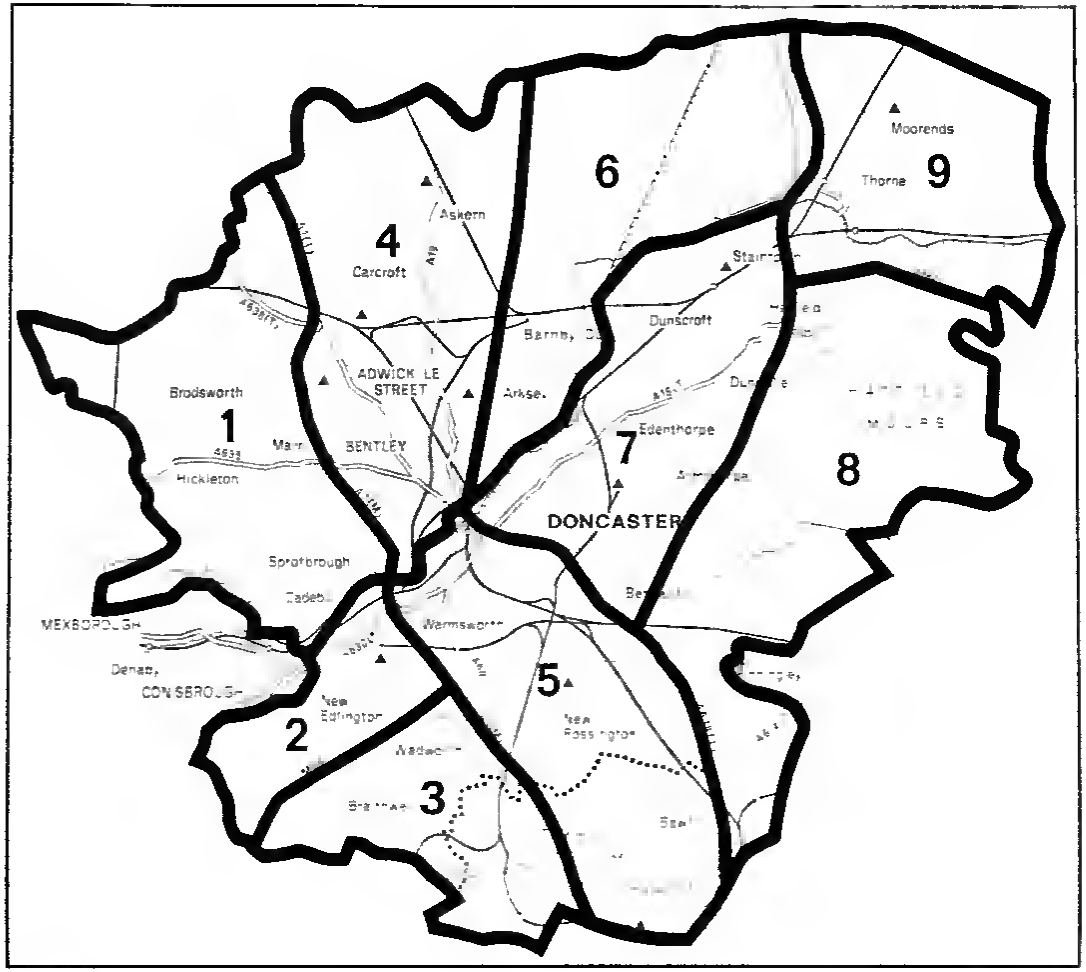

Fig.18.

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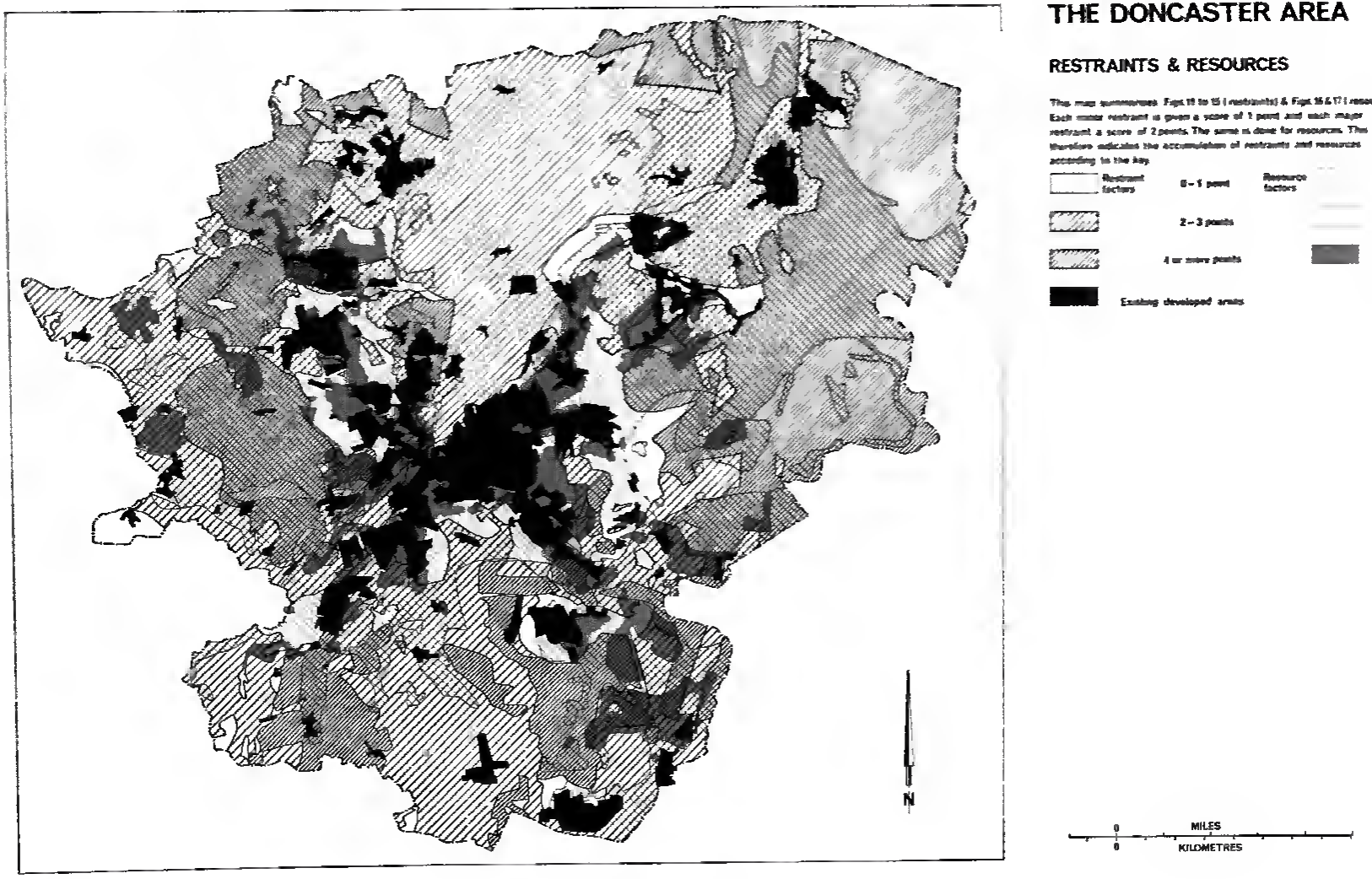
THE DONCASTER AREA
RESTRAINTS & RESOURCES
This map summarises Figs.11 to 15 (restraints) & Figs.16 & 17 (resources). Each minor restraint is given a score of 1 point and each major restraint a score of 2 points. The same is done for resources. This map therefore indicates the accumulation of restraints and resources according to the key.
Restraint factors
0 – 1 point
Resource factors
2 – 3 points
4 or more points
Existing developed areas
N
0
MILES
0
KILOMETRES

FIG.19

9. URBAN FORM

286. This chapter examines the form of urban development in the study area and attempts to identify its strengths and weaknesses as a physical basis for further growth. In itself the pattern of land uses is of little significance; the crucial aspect is the facility with which people and goods can move between different parts of the town. The analysis is therefore mainly in terms of the urban transport system. Since the type of journey which tends to put the greatest strain on the system is the journey to work, the most significant components of urban form are the principal areas of residence and employment, the road network and the public transport system. These are dealt with in turn in the three sections into which the chapter is divided.

THE PRESENT PATTERN

287. The present pattern of urban development is roughly cruciform with the two axes running NE-SW and NW-SE. Each of the axial belts is about two miles wide, although development is not continuous within them. Together they cover one fifth of the study area but contain four fifths of its population. This pattern derives from the crossing of two major highways in the centre of Doncaster (the old Great North Road and the route from Sheffield north-eastwards to Thorne and the Humber ports) and the spread of development along them. The new motorways (the existing Doncaster By-Pass and the proposed M.18 extension) lie just outside this cruciform area of development.

288. Recent development has generally reinforced the cruciform structure. An analysis of population changes in wards and parishes in the period 1951-61 shows that in those units which gained population two-thirds of the total increase of 33,000 were concentrated in only two areas:-

(i) western part of Adwick-le-Street and Bentley-with-Arksey U.Ds;

(ii) eastern part of Doncaster C.B. and adjacent parishes of Doncaster R.D.

Both these areas are within the axial pattern, as is the greater part of the land allocated by the local planning authorities for future development (see paras. 219-225). The effect of the approved development plans has been to preserve the physical identity of most of the settlements which had not already been linked to other urban development. In the western half of the study area this policy has been reinforced by an approved green belt (see Fig. 20) which is largely coincident with much of the attractive limestone countryside and Grade II agricultural land referred to in Chapter 8. The green belt within the study area is part of a much larger green belt intended to check urban growth and coalescence in the Sheffield-Rotherham-Barnsley group of towns. It has been sucessful in the face of considerable pressures for development.

289. The principal areas of employment and residence are shown in Fig. 21. The major employment zones consist of the collieries, a belt of industry along the river in Doncaster C.B., the town centre and an industrial area at Doncaster Carr. With the exception of Thorne (where there is a certain amount of manufacturing employment) the collieries employ between 1,200 and 2,600 each, principally men living close by.

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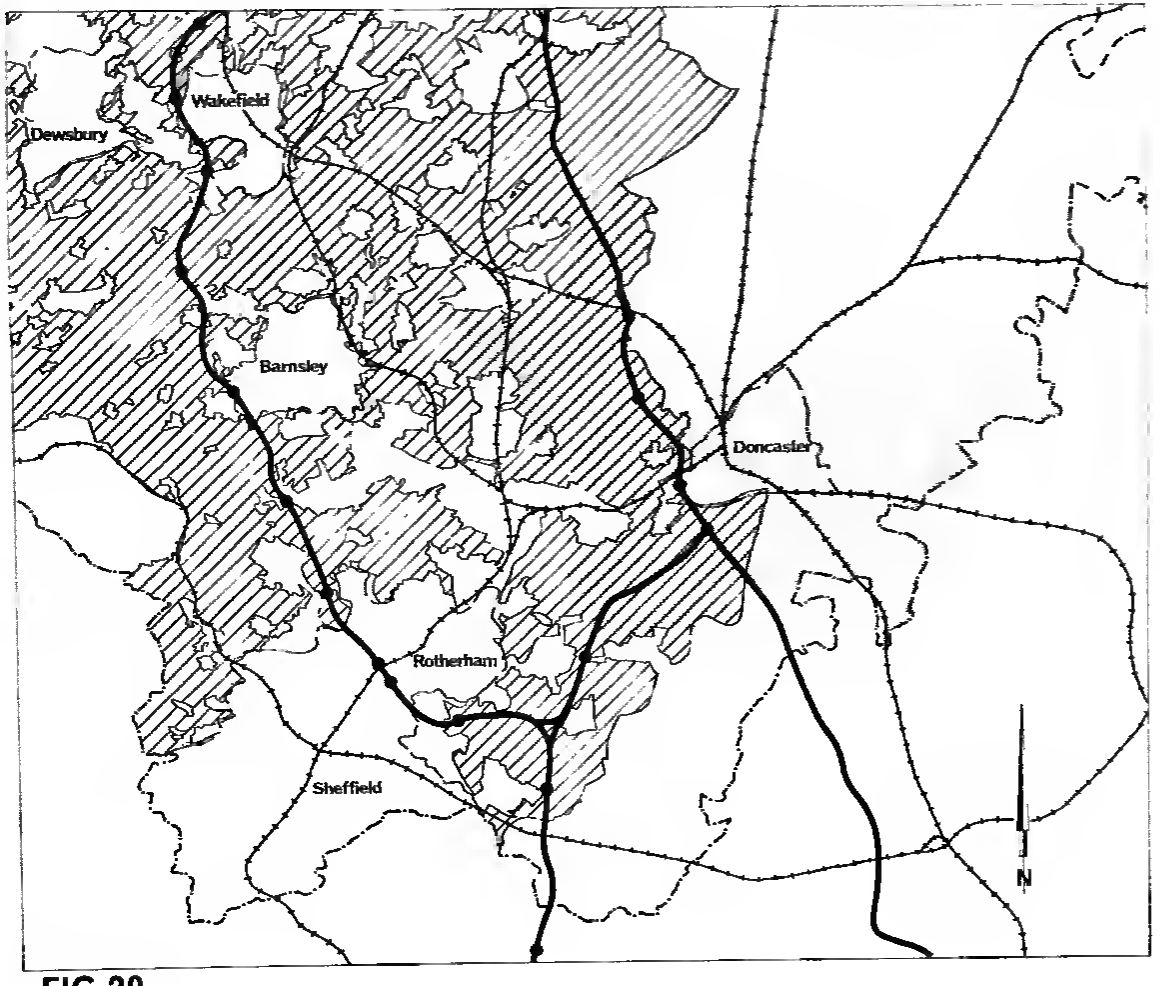

THE DONCASTER AREA

GREEN BELT

Green Belt (Approved or Submitted)

Existing motorways & A1

Railways

Doncaster Study Area

0 MILES
0 KILOMETRES

FIG.20

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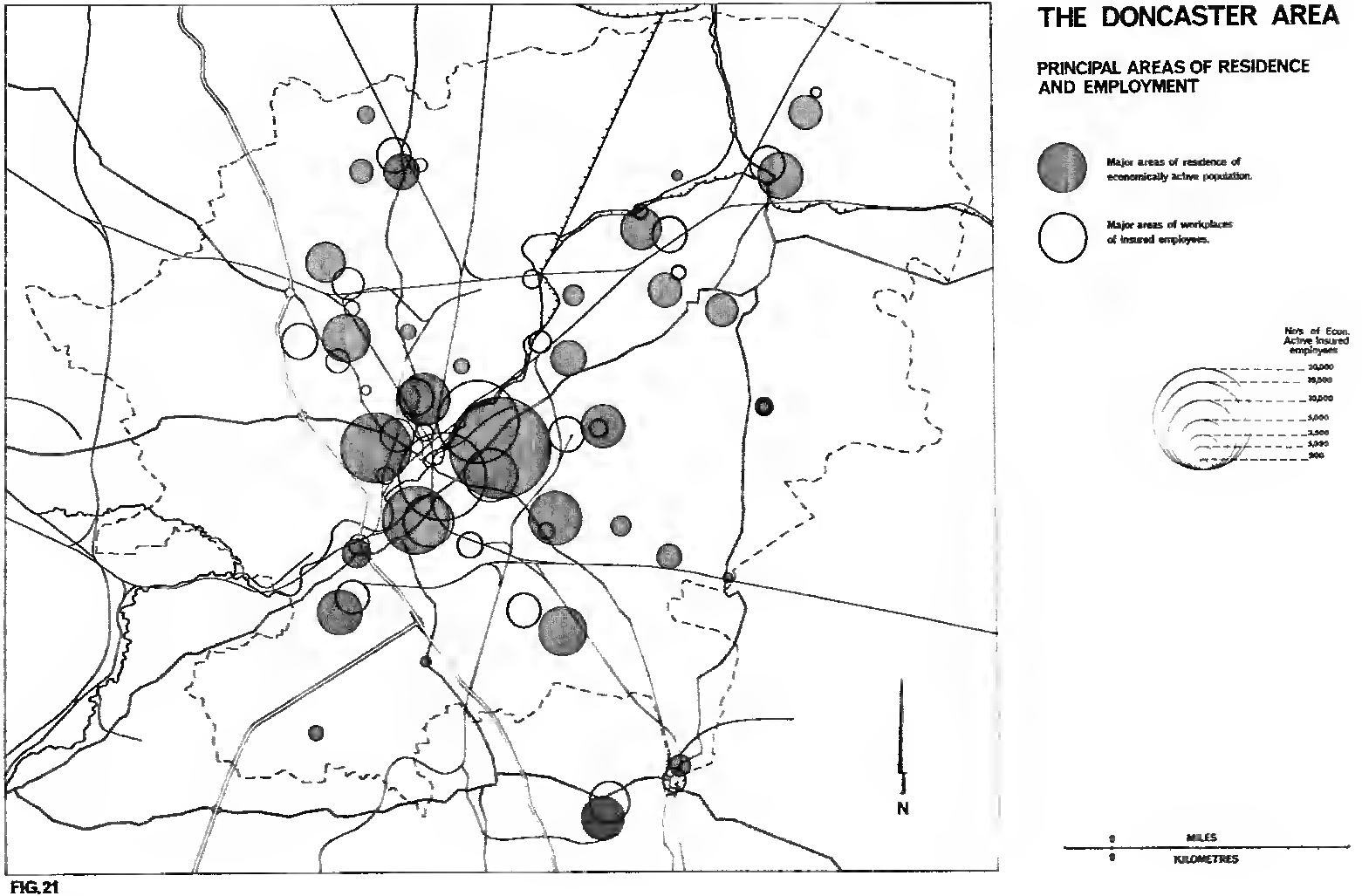

FIG.21

The other three main employment zones are concentrated in the middle of the NE-SW axis in Doncaster and bring in people from a wider area.

290. The numbers travelling to work in the County Borough from surrounding areas increased from 16,000 in 1951 to 24,000 in 1966 whilst the number travelling outwards remained steady at 6,000. This increase reflected the growth of employment in the centre, the decline of mining employment outside Doncaster and the construction of suburban housing outside the County Borough. Most of the growth in the number travelling into Doncaster has been among men. The fact that these journey to work flows are predominantly in one direction at peak bours results in traffic congestion, particularly at North Bridge (see para 293 below).

291. The mode of transport used by people employed in the study area in 1966 is shown in Table 9.1. The table shows that bus transport and the private car are the principal modes of travel to workplaces in the County Borough but in the mining areas outside Doncaster walking or cycling are much more prominent. Walking is the most important single means of getting to work in all the areas outside Doncaster except Bentley. The proportion cycling to work (10% for the study area as a whole) is very high, reflecting the general flatness of the area.

TABLE 9.1: JOURNEY TO WORK BY MODE OF TRANSPORT, 1966

Area of Workplace	Total employed in area	Percentage of work journeys undertaken by:-					
		Train	Bus	Car	Cycle	Foot	Other
Doncaster C.B.	54,340	0.8	43.1	23.9	8.2	13.7	11.1
Adwick-le-Street U.D.	5,730	0.2	24.8	13.8	12.4	40.3	8.7
Bentley-with-Arksey U.D.	5,960	0.2	32.0	16.3	12.9	25.0	13.8
Doncaster R.D.	26,160	0.2	25.2	18.0	12.6	30.8	13.4
Thorne R.D.	10,910	0.5	21.4	15.0	16.5	27.4	19.7
Study Area	103,100	0.5	32.7	20.5	10.7	21.6	14.3

THE ROAD SYSTEM

THE PRESENT POSITION

292. As the system of local roads is essentially simple, with few radials, traffic loadings are very heavy. This is shown in Table 9.2, which compares traffic volumes in July 1968 at certain points with the theoretical capacity of the relevant section of road, expressing the extent of the overload (if any) as a loading factor. A loading factor of 1 indicates that the traffic volume is the same as the road's design capacity. As applied to many existing roads, capacity is a somewhat artificial concept as widths and alignments can vary considerably over short distances and capacity theoretically fluctuates with these factors. Moreover on new roads capacities are in practice

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highly elastic and increases in traffic volume may merely cause an occasional slackening in speed. The loading factor can nevertheless be taken as a simple indicator of deviation from an ideal standard.

TABLE 9.2: TRAFFIC LOADINGS AT CERTAIN POINTS ON MAIN TRAFFIC ROUTES IN THE STUDY AREA, JULY 1968

Route	Census Point	No. of Vehicles per day	No. of passenger car units* per day	Loading factor
A.638	¼m. South of Red House	8,750	14,518	0.97
A.19	Bentley	6,542	8,030	1.28
A.18	Dunsville	13,986	22,954	1.53
A.614	Blaxton	4,124	7,876	0.88
A.638	Rossington Bridge	5,146	7,634	0.51
A.60	Loversall	2,706	3,562	0.40
A.630	Warmsworth	18,996	26,748	0.90
A.635	1m. West of Sun Inn	5,924	9,320	1.03
A.638	North Bridge	36,430	46,794	1.95

*See Table 2.1, note 1.

293. Particularly serious is the bottleneck at the North Bridge, which carries the A.638 over the East Coast main line, the Sheffield and South Yorkshire Navigation and the River Don; this provides the only route between the town centre and the area to the north of Doncaster and carries all the traffic to and from the Barnsley, Wakefield and Selby roads. Other congestion points on the A.638 are the junction with the Barnsley road (Route A.635) at the Sun Inn and, in the town centre, the junctions of Hallgate with Cleveland Street and with Thorne Road. The chief congestion point on the main east-west route is at the junction between Balby Road (Route A.60) and Kelham Street, where traffic by-passing the town centre to the south joins the main route out to the west (and to the junction with the Doncaster By-Pass at Warmsworth). As might be expected, congestion at these points is acute at peak hours.

PROPOSED IMPROVEMENTS

294. Major road schemes affecting the external communications of the study area were outlined in para. 26. Of these only the extension of the M.18 can be said to have important implications for the area's urban form. The motorway is to be extended east of Wadworth to by-pass Doncaster on the south side and Thorne on the west side. Both these by-passes are in the programme for completion in the early 1970s, but alternative lines for the route of the motorway to the south of Doncaster are still being evaluated. Apart from the additional physical barrier it would represent the motorway would have three main effects upon the urban structure. First, it would remove from the A.18 (which passes right through Doncaster) most of the traffic between Humberside and Sheffield, the Midlands and areas further to the south and west. Secondly, the eastern half of Doncaster will benefit from direct access to the motorway system, so

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relieving the routes through the town to the access points on to the A.1(M). Thirdly, the north-eastern part of the study area (particularly Thorne) besides obtaining access to the motorway is likely to benefit from an improvement in journey times into Doncaster; however, the extent of this benefit and other more detailed effects cannot be assessed until the line is fixed and a decision taken as to the location of the intersections. The removal of heavy traffic from the centre of Thorne will solve an acute local problem affecting both the environment of the central area and the movement of traffic.

295. Apart from the extension of the M.18 various road improvements are proposed within Doncaster C.B. The Inner Relief Road will provide a by-pass of A.638, passing to the west and south of the town centre. The section from French Gate to Cleveland Street has been completed and the remainder is included in the preparation pool. The Eastern Inner By-pass will be continuous with the Inner Relief Road at its northern end, extending from French Gate and running parallel with Thorne Road (A.18) which it will join close to the C.B. boundary. The section from French Gate to Wentworth Road is in the programme to start towards the end of 1969, and it is hoped to bring the remainder to dual carriageway standard in due course. The A.630/A.60 which extends from the Cleveland Street junction with the Inner Relief Road through to A.1(M) is currently being improved. The improvement of the entire length of this route will be completed in the beginning of 1970, with the exception of the Balby Bridge junction, which is programmed for 1971-72. The Southern Relief Road extending from Balby Bridge to the Race Course, and the Outer By-pass, extending through to Thorne Road, complete the east-west route to the south of the town centre. Most of this route follows existing roads, some of which are already of dual carriageway standard, though much will require considerable improvement. It is hoped to complete the dualling of this route in due course. The Inner Relief Road will be continuous at its southern end with A.638, which is dual carriageway as far as the Race Course. It is intended to complete the improvement of the radial pattern by bringing Bawtry Road, A.638, up to dual carriageway standards from the Race Course through to the C.B. boundary. These schemes will bring two main benefits. First they will improve the efficiency and environment of the central area by diverting traffic round it, and secondly, they will improve cross-town communications, particularly in respect of the journey to work. Other proposals in the C.B. include the re-construction and improvement of North Bridge, and the provision of a new road linking the Doncaster Carrs industrial area direct on to the M.18, and also on to the Southern Relief Road. There is also a proposal for a Town Fields Link Road from Thorne Road across Town Fields to the Inner Relief Road.

296. Outside the County Borough work is in progress on extending the existing dual carriageways on A.638 through Adwick-le-Street southwards towards Doncaster. A further extension as far as the junction with the Barnsley Road (A.635) at the Sun Inn is in the programme, and a scheme for the improvement of the Sun Inn junction and the extension of the dual carriageways to the County Borough boundary is in the preparation pool. The construction of a temporary bridge at Thorne to replace the existing canal bridge is programmed for the current financial year and there are long-term proposals for the construction of a Hickleton by-pass on Route A.635. The implications for the study area of the West Riding County Council's proposals for a South Yorkshire Highway are discussed in para. 28.

297. An outstanding feature of the road system as it will be on completion of the extension of the M.18 is the separation of practically all through traffic from local traffic. The major traffic flows which now traverse the study area will be confined

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to the motorways and the A.1, leaving the remainder of the road system free to accommodate traffic generated within the area. It is probable that the motorways will also attract some comparatively short-distance traffic e.g. journeys to work in Doncaster from Thorne or Rotherham.

298. We have seen from paras. 292 and 293 that the local road system is already very fully used. Considerable improvements in the system are proposed; these are largely intended to help meet existing demand, some of which is suppressed at present; they will still result in some spare capacity, though this may be partly taken up by the natural increase in traffic volumes. Moreover it should be noted that apart from the important effect of freeing the town centre from cross-town traffic the current road proposals will not change the basic structure. (It is also notable that no improvement to the North Bridge is included in the road programme). Any large-scale development of the study area would almost certainly necessitate still further expenditure on new roads. There is, moreover, the likelihood that as employment in coal mining decreases the average length of journeys to work will increase significantly and add further to the volume of traffic at peak hours. But given the necessity of major new road schemes if large scale development were to take place, the area has two distinct advantages. First, when the M.18 extension is complete, the motorways will take practically all the through traffic. Secondly, the pattern of development outside Doncaster lends itself to incorporation in a great number of possible road networks; planning policies (including green belt policy) have ensured that the communities have remained physically distinct, with wide tracts of open country between them. On the other hand, the number of barriers to development - railways, motorways and waterways - would be liable to impose some extra cost on the extension of the primary road network (some account of this factor was taken in para. 251). The valley of the River Don is a particularly serious barrier.

THE PUBLIC TRANSPORT SYSTEM

299. The pattern of bus routes and the frequency of service strongly reflect the cruciform pattern and the dominance of Doncaster as the service centre for the study area (see Fig.22). The number of routes is limited and most of the population is served by frequent services to the town centre. All but one of the services terminate in the central area.

300. Table 9.1 showed that the railway is of no significance in the journey to work pattern. This is hardly surprising when only two communities in the study area - Stainforth and Thorne - are linked to Doncaster by passenger services. An analysis of rail ticket issues in 1966 shows that only about 2,000 journeys (i.e. for all purposes over the whole year) were made in each direction between Thorne and Doncaster and 600 between Stainforth and Doncaster[13]. The railway was of more significance to areas a few miles outside the study area, i.e. Goole (33,000), Scunthorpe (19,000) and South Elmsall[14] (13,000), but greater numbers travelled between Doncaster and Leeds [14](103,000), Wakefield[14] (40,000) and Sheffield (43,000).

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13. In 1966 there were also stations at Barnby Dun and Carcroft, but these have since been closed.

14. Throughout 1966 cheap day returns on the Doncaster-Leeds line were cheaper than the ordinary single fare and consequently many return journeys paid for may not in fact have been made. On the extreme assumption that every cheap day return was used for one journey only the approximate figures become South Elmsall 8,000, Leeds 53,000 and Wakefield 20,000.

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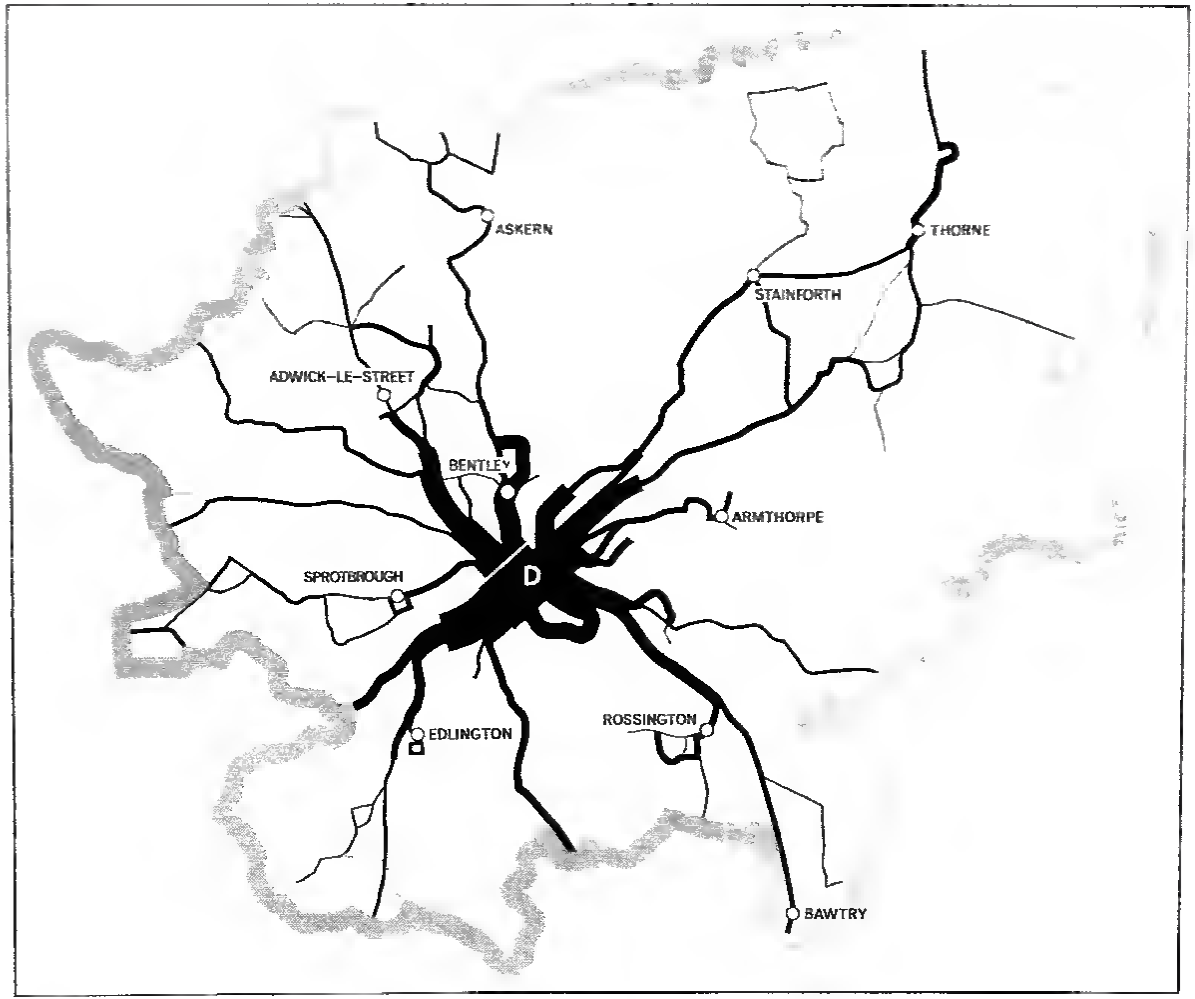
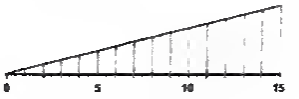


FIG. 22.

THE DONCASTER AREA

BUS FREQUENCIES



HUNDREDS OF BUSES PER DAY IN BOTH DIRECTIONS MON-FRI

Not more than thirty two buses per day (in both directions) Mon-Fri. ———

No daily bus service

301. It is clear that for the foreseeable future the public tranaport system will continue to be based on buses. The cruciform pattern of urban development has the effect of concentrating traffic into comparatively few routes, which is an advantage. The existing system already caters for journeys to work as satisfactorily as peak hour congestion permits, and it ahould be possible to expand and adapt the system in order to meet any increased demands arising from an increaae in the length and complexity of work journeys. For the more remote mining communitiea both within the study area and outside it, there are important possibilitiea of express bus services being feasible. Three aspects of the urban pattern favour such a development, i.e.:-

(i) The concentration of sizeable populations (typically 10-20,000) in the mining communities, so facilitating the collection of passengers with only few picking-up points.

(ii) The possible use of a section of motorway for part of the journey, ao reducing the journey time.

(iii) The concentration of existing workplacea (other than coal mines) in a belt from Kirk Sandall and Wheatley Park to the central area of Doncaster and Doncaster Carr (see figs. 4 and 21).

On the other hand the concentration of workplacea in Doncaster resulta in heavy loads in one direction and uneconomic return trips.

302. Bus aervices, express or otherwise, are liable to suffer along with other road users from traffic congestion. The road improvements described in paras. 294 to 296 above should do much to relieve this congestion, but it may still be necessary to give preferential treatment to busea (e.g. reserved tracks). If really attrsctive services were provided, public transport should be able to continue to claim a high proportion of the longer work journeys, which would be particularly desirable in view of the high pressure of traffic on the local road system.

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SUMMARY

(i) Tbe present pattern of development is roughly cruciform. Apart from the coal mines, the principal employment areas are in Doncaster, on the NE - SW axis.

(ii) The preservation of undeveloped land between the communities outside Doncaster gives opportunities for many alternative forms of development in the future.

(iii) On completion of the M.18, tbe motorways should remove mucb of the througb traffic from Doncaster.

(iv) Because the system of local roads is simple, with few radials, traffic loadings are very heavy. The North Bridge is a particularly serious bottleneck. There is little useful spere capacity on the road system.

(v) Road schemes under construction and in the programme will divert traffic round the central area of Doncaster, facilitete cross-town movement and improve some sections of the radial routes.

(vi) The public transport system is besed on buses; the railway is of little significance for purely local movements.

(vii) The urban form has certain features which are fevourable to the operation of bus services and to their future development.

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10. ASSESSMENTS, CONCLUSIONS AND PLANNING OPTIONS

303. Previous chapters have examined the main social, economic and physical features which bear upon the economic future of the study area. This material is now brought together in a series of assessments which lead to overall conclusions about the growth potential of the area. Upon this is based the final part of the chapter which sets out four regional planning options for the further development of the local economy.

304. This chapter is subject to the limitations of any planning exercise which looks into the future. The assessments are based on the latest available data and in some cases on projections into the future, reflecting, wherever possible, the position in the mid 1970s. The length of time over which a particular feature can confidently be expected to influence the economic development of the area varies from one feature to another. Some are practically unchangeable, for example climate and landscape, although the latter can be significantly modified over the years. Even under the most adverse conditions it would be many years before the advantage of having a comparatively modern stock of housing and a substantially renewed central area could be eroded. On the other hand, industrial change is often rapid and the employment situation cannot be forecast with any confidence for more than a few years ahead. Even then there is always the possibility of an unforeseen development transforming the situation. Changes in government policies can also have a profound effect and it should be noted that throughout this report the analysis is based on the policies operative at the time of writing.

ASSESSMENTS

305. In order to assess factors relating to the future of the study area, each feature is marked in accordance with a simple five-point scale:-

A	B	C	D	E
High	Medium-high	Medium	Medium-low	Low

Where appropriate, reference is made to the national average, and if the local situation approximates to this a "medium" assessment (C) is given. A "high" mark (A) signifies that in respect of the feature under consideration the study area is considered to be among the best locations in the country. Features with favourable assessments represent aspects of economic growth potential, while those with low assessments will tend to act as restraints upon growth. There is clearly a substantial subjective element in these assessments, particularly in those cases where no convenient national yardstick is available.

306. The assessments relate the study area to the country as a whole because it is considered that it is primarily within a national context that the main locational decisions of significance to regional planning are made - e.g. by industrialists locating their plant or by people migrating to take up better jobs. Had the assessments been related to the regional averages, or to those of the Yorkshire Coalfield, there is no doubt that the study area would in many respects be seen to considerably greater advantage.

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307. No attsmpt has been made to give numerical weights to the factors, although some are clearly of greater importance than others. The assessments are listed in Table 10.1 and are grouped under five main headings:-

1.	Strategic Resources	(Chapters 2 and 3)
2.	Human Resources	(Chapter 4)
3.	Industry and Employment	(Chapter 5)
4.	Environment	(Chapters 6 and 7)
5.	Land Resources and Urban Form	(Chapters 8 and 9)

References to the relevant paragraphs in the text are also shown in Table 10.1.

STRATEGIC RESOURCES

308. In general, the strategic resources of the area are considerably better than those of most locations. Chapter 2 showed that the area will be very well served by motorways in the mid-1970s although at present east-west connections are not so good. Based on the situation as it will be in the mid-1970s, roads are assessed "high" (A) and access to consumer markets by road compared with other locations is assessed "medium-high" (B). In respect of railways, although services are also somewhat limited in an east-west direction, the north-south services are excellent; moreover, there is some surplus capacity on all routes radiating from Doncaster (A). Inland waterway connections are very much better than those in most other areas (A). There is already good access to a number of the country's major ports; this will improve still further by the mid-1970's (B). In one respect, however, the communications of the study area are deficient, namely air services (D) because of the distances which it is necessary to travel to the nearest airports, particularly those providing inter-continential services.

309. It was seen in Chapter 3 that the costs of energy (B) are relatively lower in this arsa than in many other parts of the country; furthermore proximity to coal, electricity and North Sea gas supplies ensure adequate provision in the long term of these forms of energy at low cost, although the benefit of the low costs may not necessarily be passed on to the consumer. Water costs are also lower here than in other parts of the country, and this advantage remains despite the higher cost of pumping sewage effluent in low-lying areas. Although future additional sources of water supply will be more expensive the area should retain a significant comparative advantage (B). Lastly, the presence of surface minerals in the area including limestone and a rich sand and gravel field represents a resource of significance to the study area (and, indeed, to the region) because of the importance of transport costs in relation to the ex-works price (A).

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TABLE 10.1: ASSESSMENTS

Scale used for assessment; A = high, B = medium/high, C = medium, D = medium/low, E = low. Items are assessed from the point of view of their effect upon economic growth, i.e. a "high" assessment is favourable to growth; a "low" assessment unfavourable. (See Paras. 305-307).

Paragraph Reference	Items	Assessment				
		A	B	C	D	E
	1. STRATEGIC RESOURCES					
308: 20-29	Roads (mid-1970's)	X				
308: 30-32	Access to consumer markets by road (mid-1970's)		X			
308: 33-42	Railways	X				
308: 43-48	Inland Waterways	X				
308: 49	Access to Ports (mid-1970's)		X			
308: 50-57	Air services				X	
309: 59-69	Energy costs and supplies		X			
309: 70-78	Water costs and supplies		X			
309: 79-84	Surface minerals	X				
	2. HUMAN RESOURCES					
310: 97-99; 165	Future labour supply and demand:					
	- Males	X				
	- Females		X			
311:	Types of labour available:					
101-103	- age structure		X			
104-105	- socio economic factors				X	
106-107	- training			X		
	3. INDUSTRY AND EMPLOYMENT					
312-313: 111-130 and 157-164	Growth potential of existing industry:					
	- Doncaster County Borough			X		
	- rest of study area					X
314-315: 155	Job opportunities				X	
316: 131-133	Industrial buildings - number				X	
	" " - quality	X				
	4. ENVIRONMENT					
317: 167-171	Housing stock		X			
318: 177-180	Education services			X		
318: 181-185	Health services			X		
319: 186-189	Shopping		X			
319: 190-194	Community life		X			
320: 195-199	Landscape			X		
320: 200-202	Dereliction				X	
320: 203-206	Outdoor recreation facilities			X		
320: 207-213	Climate			X		
320: 214-217	Air pollution				X	
320: 218	River pollution				X	
	5. LAND RESOURCES AND URBAN FORM					
321: 219-220	Supply of housing land (shorter term)		X			
321: 221-225	Supply of industrial land (" ")		X			
322: 226 et seq.	Longer-term supply of land		X			
323: Ch.9	Urban form			X		

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HUMAN RESOURCES

310. Recent population trends indicate that the male labour supply should remain fairly steady up to 1975, and that the number of women in the working age groups will increase to 1971 and will continue to increase, though at a lesser rate, up to 1975. The asaessments for the future relationship of labour supply and demand are based on the estimatea in Chapter 5 which indicated an excess of aome 6-10, 000 men by 1975. Seen from the employer's point of view this represents a major labour resource available to aupport economic growth (A). There is likely also to be a amall surplus of female lahour available in 1975 (B).

311. So far aa the type of lahour available is concerned, the working population has a comparatively young age structure (B). On the other hand two related socio-economic factora are unfavourable (D); the lack of managerial and professional workers and the very high proportion of people with an early terminal education age. Training is assessed "medium" (C); although the proportion of boys entering apprenticeahipa is higher and an above average proportion of pupils stay on at school in Doncaster C.B. after the age of 15, the deficiency in joba for young people in employment with training given to at leaat aemi-skilled level gives some cause for concern.

INDUSTRY AND EMPLOYMENT

312. There is a subatantial element of manufacturing industry in the area. A diverarty of industrlea, many of them established in the poat-war period, provide some 30, 000 johs (compared with coal-mining's 21, 000). Although the immediate growth prospects are at beat a marginal increaae in employment, this group of manufacturing industries provides a aubstantial base for further economic development. The size of thia base of manufacturing industries is significant in three ways: first, it creates a pool of relevant skills and experience; secondly, it providea the means for training labour; and thirdly, it aupports certain industrial services. An example is the technical services provided by the Doncaster Technical College, but it should be noted that in general the predominance of large firms, some of which are parts of larger organisations, tends to limit the local demand for supporting servicea so that they have not been as fully developed as might be expected.

313. The recent and snticipated decline of employment in coal-mining can, on the other hand, only depreas the assessment of the growth potential of existing industry in the area. In order to expreaa these two conflicting elements in the industrial structure, it is useful to separate Doncaster C.B., in which the greater part of manufacturing industry ia located, from the rest of the study area where the coal mines are aituated. The Doncaster element is assessed "medium" (C) and the remainder "low" (E). Growth in the service industries is likely to be mainly dependent upon the size of the local population, its wealth and patterns of spending. Some employment decline is expected in the two service industries which are not dependent upon the population - railway tranaport and electricity supply.

314. Although the number of jobs available is of vital importance, the quality of jobs available to people in the study area from existing induatriea - the range of job opportunitiea - is also important. There are serioua deficiencies in this respect and although different factora operate, a "medium-low" aasessment (D) is made in respect of job opportunities for men, women and young people. Male employment is heavily biased towards coalmining, although there are two compensating factors to be

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horne in mind. First, as the number in the industry diminishes so does the hias. Secondly, the earnings of male adult manual workers in hoth the mining and manufacturing industries appear to be good; earnings in coalmining are ahove the relevant national average, and those in manufacturing are not far off. Joh opportunities for women have improved considerahly in recent years and are likely to continue to do so. There is a fair range of opportunities in manufacturing and services, hut they are heavily concentrated in Doncaster, leaving a prohlem in the outer parts of the study area. A few hundred women travel long distances daily from the mining communities in transport organised by employers. There are also problems for young people not taking up apprenticeships, many of which are in coalmining; the supply of johs involving training to semi-skilled level is extremely limited.

315. The area shares with the rest of the country the expectation of further increases in the relative importance of service employment. This should lead to a further broadening of the range of joh opportunities for adults and young people including johs in a number of professions for which there is currently an unsatisfied local demand (e.g. doctors and dentists). There is, however, a danger that the expected growth in service employment would he seriously affected by the adjustment to the decline in the demand for male lahour unless the gap were filled hy new jobs.

316. The importance of the coal industry means that the number of industrial buildings is limited (D), hut they are nevertheless of generally good quality, although there are some older premises. It is arguable that the presence of a certain proportion of older premises is desirahle in that they provide cheap accommodation for newly-established enterprises, which might he unable in their early years to afford modern premises. The possihility of new firms being started on local initiative and growing out of the pool of technical and husiness experience is a potentially important contribution to the process of growth, although such developments have not in the past been common in the area. The quality of industrial huildings (which are normally on good sites) ia therefore probably near the optimum (A), and they provide generally good working conditions. It should also he noted that premises suitable for office and commercial use are available including a number of newly-constructed premisea in the central area.

ENVIRONMENT

317. An increasingly important aspect of the growth potential of an area is the attractiveness of its environment in the broadest sense of the term. In the Doncaster area, the housing stock is in good condition and relatively modern (B). When considered in relation to housing prohlems elsewhere in the country, the housing stock represents a capital resource of considerahle value. House prices appear to be very significantly lower than the comparable national averages.

318. In the education and health services the level of provision tends to be adequate and in relatively modern accommodation. However, the numbers of doctors and dentists in relation to the population are lower than the national average (C).

319. Another aspect of the environment of the study area which has been assessed as "medium-high" (B) is the provision of shopping facilities. Doncaster is of increasing importance as a shopping and service centre with ample car parking facilities. There is a substantial area of unlet floor space both in the town centre and elsewhere in the study area, and this is a considerable unused resource available to support future development of the area. The community life of the study area (B) is particularly

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strong in the mining villages and is good in respect of entertainment facilities provided in Doncaster itself, although in comparison with the major urban centres a town of this size is necessarily limited in the range of facilities it can provide.

320. The landscape is assessed "medium" (C), reflecting a balance between the attractive western part of the study area and the flatter and uninteresting eastern part. Dereliction is noticeable in the area, but less so than in some other areas (D). Outdoor recreation facilities are assessed "medium" (C): there is considerable potential for the provision of additional facilities. Climate is also assessed "medium" (C) but there are serious but not extreme problems of air and river pollution (D).

LAND RESOURCES AND URBAN FORM

321. There is a good supply of housing land immediately available which is likely to meet local needs for some years to come, although the choice of sites providing a really high standard of environment is limited (B). Chapter 8 showed that there is a good supply of industrial land for the shorter-term needs of industry. Many existing industries have sites with room for expansion, and 17 sites of over 10 acres are available (B).

322. The adequacy of land resources for development in the longer term (assuming this were on a large scale) is difficult to assess. There is no doubt that large-scale development is perfectly feasible; the point at issue is whether the costs of development would be high or low compared with other locations. It is not possible at this stage to measure comparative costs, but the work done suggests that with careful planning a substantial increase in population of up to 300-375,000 could be accommodated without incurring unduly high costs. There are a number of factors conditioning development, principally:-

(a) Problems of drainage and subsidence. These are inter-related problems which directly or indirectly affect the whole area. Also related to the problem of drainage are considerations of water supply, agriculture and potential for water recreation. As noted in paragraph 255, the best solution to this complex of problems and opportunities requires a comprehensive engineering assessment.

(b) Large areas of good quality agricultural land.

(c) Important resources of surface minerals.

(d) The need to find sites which provide a good residential environment without sacrificing the areas of highest landscape value to development.

(e) The need to expand in such a way that the development integrates logically and efficiently with the existing pattern of development.

The first of these factors is the most important as it affects most of the area, but it does appear that the most poorly-drained areas will be less affected by subsidence than the better-drained areas. Any small extra cost per dwelling here is likely to be offset by low land prices. It should be possible for large-scale development to take place without seriously affecting any of the remaining factors, which in any case may

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he regarded as potentials and challenges just as much as prohlems. This item is therefore assessed "medium-high". (B).

323. The examination of urban form showed that within the basically cruciform structure there exists very little useful spare capacity on the road system, either now or in the future. Peak hour congestion is acute, particularly at the hottleneck at North Bridge. There is only one cross-town hus service and many journeys to work involve a change of vehicle at the town centre. On the other hand the concentration of industrial and service employment is potentially advantageous from a labour catchment point of view, and the preservation of undeveloped land between the communities outside Doncaster gives opportunities for many alternative forms of development. An overall "medium" assessment is made (C).

CONCLUSIONS

324. It is now possihla to draw together the main overall conclusions about the present economic position of the study area and its outlook for the future. In the first chapter it was noted that population growth had heen particularly rapid in the present century following the development of this part of the Yorkshire coalfield. There is now a marked hias towards the younger age groups in the population resulting from tha movement of many young adults into the area and a very high rate of natural increase, which averages about 2,000 per annum - nearly twice the national percentage rate. Unless offset by outward migration of younger adults and their families on a massive scale, a high rate of natural increase is likely to persist for many years to come. Associated with the rapid rate of population growth over the last half-century is the construction of a modern infrastructure including housing and central area development. Another effect is the above average rate of expansion in employment in the service industries serving the local population. The overall impression, therefore, is of a youthful, modern and dynamic area.

325. But the economic basis of this expansion, which has achieved such a marked impetus, cannot support further growth. Indeed, the number of johs in coalmining is falling and will continue to do so. As a result unemployment (particularly of males) has risen sharply, the male activity rate has fallen and there are indications that since 1965 the balance of migration has changed to a net annual loss.

326. The central and immediate problem of the area - and at the same time its greatest opportunity - is therefore the growing pool of male labour. It is estimated that this surplus will reach 4-6,000 by 1971 and 6-10,000 by 1975 unless new sources of male employment are introduced. The other hroad groups of industry - manufacturing, construction and services - are expected to maintain their existing demand for male labour, hut not to increase it significantly. The demand for female lahour, on the other hand, is likely to increase, particularly in the services sector. The female employment position has improved considerably in recsnt years, and although prohlems remain, they are likely to he reduced rapidly if the mals employment prohlem is solved.

327. The area's ahility to retain its population and possibly also to contribute to the solution of the prohlems of a wider area depend upon its overall potential for economic growth. The extent of this potential can he gauged from the results of the assessments in the earlier part of this chapter, which identified the factors favouring growth (A and B) and those which are liable to hinder it (D and E). Those items assessed

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"medium" (C) may be regarded as generally neutral when comparing the study area with other urban areas, although in comparison with an undeveloped area the presence of an existing base of manufacturing industry and the existence of a well-developed range of services must be regarded as important advantages.

328. Factors favouring industrial and/or population growth are:-

STRATEGIC RESOURCES

(a) A strategic location on the national system of communications, in particular:-

(i) Excellent road communications.

(ii) Rapid access by road to the main consumer markets in the country.

(iii) Excellent rail communications.

(iv) Location on one of the most important inland waterway systems in the country.

(v) Good access to the principal ports of the country.

(b) A number of other important strategic resources favouring industrial and other development:-

(i) A significant advantage in the prices to consumers of most forms of energy.

(ii) Low cost of water.

(iii) Important local resources of sand, gravel and limestone.

HUMAN RESOURCES

(c) The supply of labour, particularly male labour.

(d) The young age structure of the labour force.

INDUSTRY AND EMPLOYMENT

(e) An excellent range of industrial premises (although their quantity is limited).

ENVIRONMENT

(f) A modern stock of houses.

(g) The facilities of a well-developed service centre in the modernised central area of Doncaster.

(h) A well developed community life in the area.

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LAND RESOURCES

(i) A good supply of land for both housing and industry.

329. The following features received unfavourable assessments. Unless rectified, they could tend to impede industrial and/or population growth:-

STRATEGIC RESOURCES

(a) Tbe paucity of airport facilities witbin easy travelling distance.

HUMAN RESOURCES

(b) An under-representation of managerial, professional aod "white collar" workers and of people who have beeo educated beyood the age of 15.

INDUSTRY AND EMPLOYMENT

(c) The declioe io employmeot in the coal industry, tbe vulnerabillty and consequent slow overall rate of growth in manufacturing employment.

(d) A ratber restricted range of job opportunities.

(e) The restricted aize of tbe stock of lodustrial buildings.

ENVIRONMENT

(f) Two unattractive features of the physlcal eovironment, i.e.:-

(i) A problem of derelict and spoiled laod;

(ii) Problems of air and river pollution.

330. There can be no doubt tbat the resource factors outlined in para. 328 together constitute a significant potential for growth. This is borne out in the evidence of the recent history of movement of firms into the area and tbe sdvantages they see in being located here. Chapter 5 sbowed that since 1945 the study area has attracted manufacturing firms which in 1967 accounted for at least 9,800 jobs or 32% of all employment in manufacturing. In this period the study srea at no time enjoyed the financial advantages available in Development Areas and Development Districts. Furthermore, most of these establishments came to the area before the construction of the Doncaster by-pass and of M. 18 and M. 1. New firms frequently quoted labour supply, good communications, and access to markets as the main locational advantages of the area. These advantages have been strengtbened by the increasing svsilsbility of male labour, arising from the reduction in demand for workers by the coalmining industry. As more male labour becomes available, and as east-west motorways are built, tbe study area will become even more attractive to new industries.

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331. The extent to which it is desirable to encourage economic growth in the area - including steps to ameliorate the fsctors inhibiting economic development set out in paragraph 329 - is a question of judgement. The final section of this chapter therefore sets out a range of four regional planning options in order to provide a basis for the consideration of the sppropriate plsnning strategy for the area.

PLANNING OPTIONS

332. The planning options selected for discussion sre as follows:-

(1) Continuation of existing trends.

(2) Retention of the natursl increase population.

(3) Growth point for a wider ares of the coalfield.

(4) Regional growth point.

The implications of each option are discussed with reference to:-

(a) Industry and employment

(b) Population

(c) Strategic resources and environment

(d) Land for industry and housing.

In addition, implications in terms of male jobs are illustrated diagrammaticslly in Figure 23, while Figure 24 shows the implications for population and land for development over and above the capacity of the land now available. The main implications of the four options are summarised in Table 10.2.

OPTION 1: CONTINUATION OF EXISTING TRENDS

333. The first option assumes that the trends existing at the time of writing (March 1969) are continued indefinitely so fsr as the study area is concerned.

334. In terms of industry and employment a male employment gap estimated at 6-10,000 would open up in the years to 1975, representing an extremely serious social problem and waste of human resources. The very steep increesse in male unemployment in the years 1966-7 and 1967-8 shows an already serious situation. It is probable that the situation will also be expressed in terms of reduced activity rates and loss by net outward migration, but the likely relative importance of the three factors has not been estimated. In theory another possible outcome is an increased volume of daily journeys to work in areas outside the study area. But even though these aress have not been examined in this study, there is little doubt that a significant increase in outward journey-to-work movements would be very unlikely on account of the even greater lack of male job opportunities in the adjoining parts of the region.

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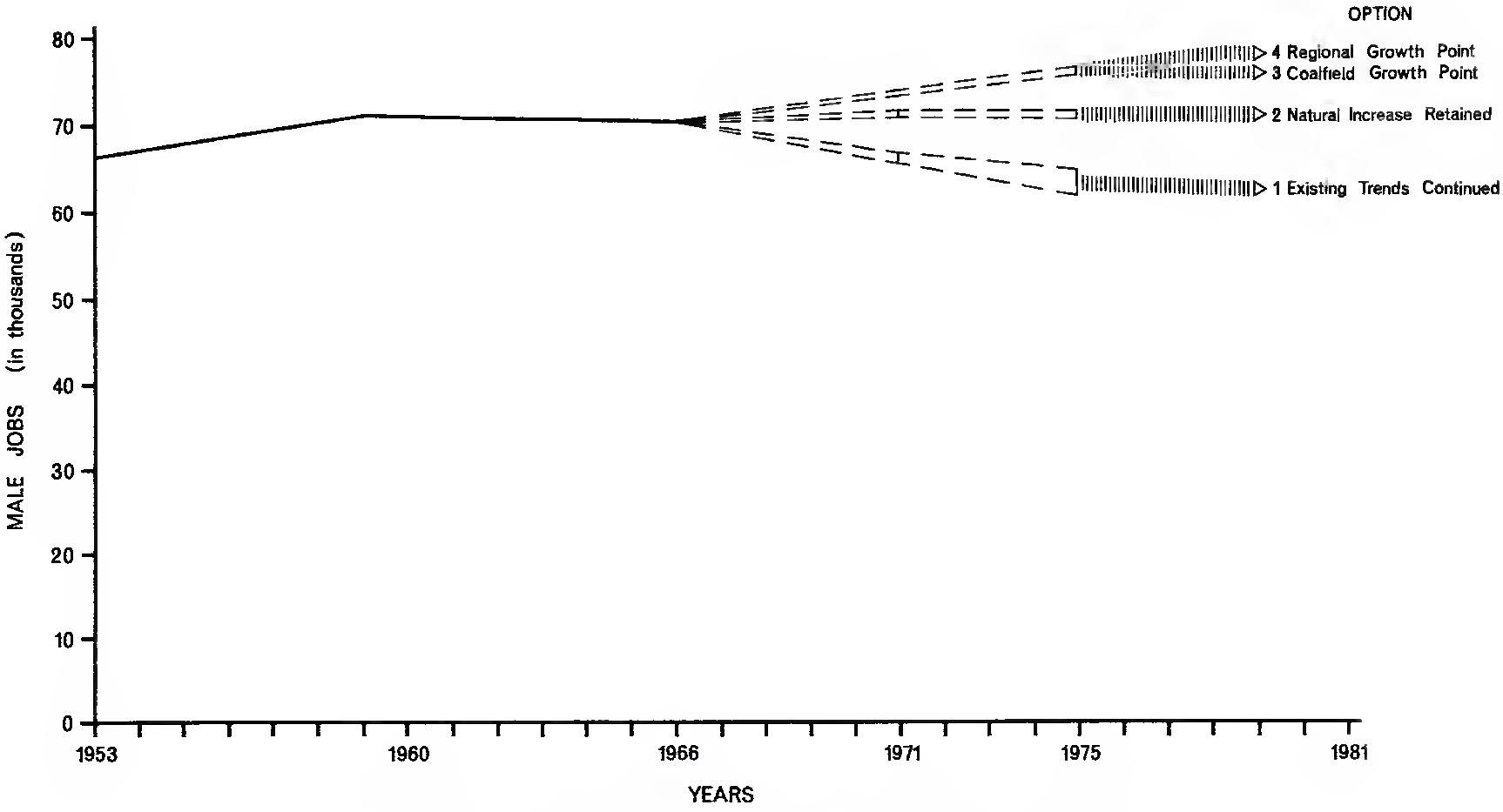

Fig. 23. MALE EMPLOYMENT AND SOME PLANNING OPTIONS

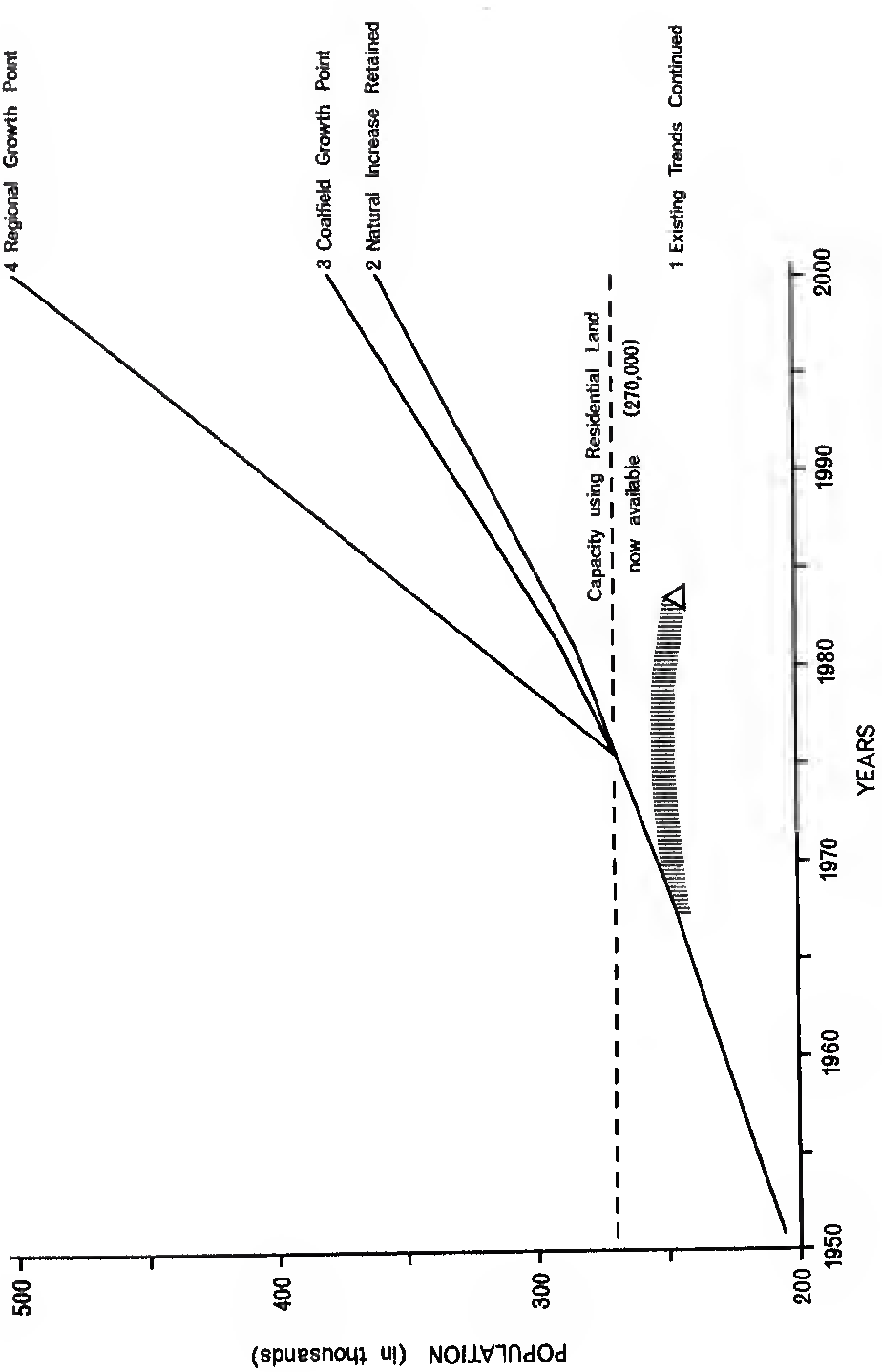

Fig. 24. POPULATION AND SOME PLANNING OPTIONS

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335. A likely effect of this option would be a loss of population perhaps even to the point of overall population decline. Outward migration would include young adults and their families, so increasing the need for housing, schools etc. in the more prosperous and congested areas of the country. Meanwhile the opportunity for economic growth in the Doncaster area would be lost. In particular, aspects of its strategic resources and environment would remain unused - communications, energy, water, surface minerals, modern housing stock and town centre development. To this list may be added the ready supply of land for industry and housing which would also not be exploited under this option.

OPTION 2: RETENTION OF THE NATURAL INCREASE POPULATION

336. For the Doncaster area, the retention of a population equivalent to the natural increase involves a rapid growth to very approximately 360, 000 at the end of the century, an increase of over 100, 000 on the present population. If this is to be achieved, the implications for industry and employment are that the male employment gap of 6-10, 000 by 1975 would have to be filled by incoming industry. This could only be accomplished by an early and determined effort on the part of central and local government to induce industry to settle in and/or expand in the area. Appropriate action would almost certainly include:-

(i) Concentration on the provision of male jobs. Except in the remoter mining communities the need for more female jobs would probably be met by the continued increase in service employment and by the extra female employment which is created by even the most male-dominated industry.

(ii) The possibility of drawing in some sources of service employment which are not dependent upon the local population.

(iii) Attention to the need to improve the range of jobs, particularly those for young people providing training to semi-skilled and skilled levels.

(iv) Retraining by industry of men, particularly ex-miners.

(v) Consideration of the implications for public transport of the changes which would occur in the distribution of workplaces in the study area.

337. In the longer term - after 1975 - this option would probably require a less rapid rate of creation of male jobs than would be necessary in the period of industrial restructuring. Although some further decline in employment in the coal industry is to be expected after 1975, this could well be offset by continuing growth of the industries which would by then be established in the area. A successful "pump-priming" of new industry in the period to 1975 would create its own dynamic, encouraging the development of associated industries and services and probably leading to a period of much steadier growth, a condition which Doncaster has never quite achieved in the past. Growth has been too dependent upon the fortunes of individual industries and firms and the local economy has not been sufficiently diversified to avoid the attendant dangers of vulnerability - of which the current situation provides an extreme example.

338. In respect of the implications for population, it should be noted that although this option is defined in population terms it refers only to total numbers. The successful retention of a population equivalent to the natural increase does not preclude

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the loss by net migration of particular groups. The tendency for the area to loae professional, scientific, and "white-collar" workers and the shortage of doctora and dentists suggeats a need to pay special attention to the creation of hetter job opportunities and a more attractive environment. The study identified two particular deficiencies of tbe pbysical environment whicb might well influence the pattern of migration. First, the landacape tends to be dull over mucb of the area and in parts suffers from dereliction and associated problems. These difficulties cannot in practice be entirely eliminated although very considerable improvements can be brought about by such means as extenaive tree planting and grassing of tips. Secondly, there are problems of air and river pollution which can be remedied. In addition, there is acope for the improvement of outdoor recreation facilities, which although not seriously deficient, are not very outstanding either. The area lacks any extensive stretches of country with unimpeded access for the public, nor does it possesa any substantial sheet of water suitable for recreation. These facilities could be created; in Chapter 8 it waa noted that some very pleasant well-wooded areas are to be found locally whilst there are clearly opportunities for the creation of inland water in a low-lying area affected by mining subaidence and surface mineral extraction.

339. Other implicationa for strategic resources and environment can he summarised in the observation that this option unlike the first, would take full advantage of tbe resources mentioned in paragraph 335.

340. There would be no immediate shortage of land for industry and housing. However, the necessary rate of industrial development is sucb that substantial areas of new industrial land would be required, prohably on the scale of at least two large and well laid out industrial estates. In addition to giving eatabliabed industrialists a choice of site for new development tbe growth of new local enterprises might be encouraged by the provision of small induatrial unita at low rents, perhaps by the converaion of some of the older industrial premises.

341. Land which is already available for residential development is adequate for the needs of the increasing population until about 1975, when the population would be approximately 270, 000. Land would be requlred for an additional 50, 000 hy 1991 or 90, 000 hy the end of the century (these figures are, of course, very approximate). Substantial allocations of land would be required hut no untoward difficulty is foreseen in making it available.

OPTION 3: GROWTH POINT FOR A WIDER AREA OF THE COALFIELD

342. The aecond option assumed that industrial growtb would be sufficient to support the natural increase population of the study area hut witbout contributing to the solution of the problems of adjoining parta of the coalfield. This is a somewhat artificial asaumption hecause in practice the study area boundaries would be blurred and men living in, for instance the Dearne Valley communities would be just as likely to fill jobs in Doncaater as men living in the remoter communities of tbe study area. Tbe third optıon aasumes that not only are the employment needs of the study area's population met, but that induatrial growtb also provides jobs for a substantial number of men living elsewhere. In tbe context of the Economic Planning Council's study of employment prospects in the coalfield area, a target of 5, 000 extra male jobs by 1975

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would seem appropriate; this would mean that the study area accounted for a total of 11-15, 000 extra male jobs of the grand total of 35, 000 required in the main Yorkshire Coalfield area[15] .

343. The implications of this option are similar to those of the second, except in the following respects:-

(i) Industry and Employment: The task of providing an extra 5, 000 male jobs would make the problem of attracting new sources of employment even more urgent. The need for retraining facilities would also become more urgent and the implications for the public transport system would extend beyond the boundaries of the study area, particularly to the west.

(ii) Population: There would be a tendency for families dependent upon work in the study area to move into houses near at hand and this might result in a small inward migration. A nominal increase of 10, 000 total population in the period 1975-81 is indicated in Figure 24, and this population would contribute its own natural increase thereafter.

(iii) Land for industry and housing: An even more substantial provision of land for industrial development would be required. It would be important to ensure that full account is taken of the need to site new industrial areas at points which are easily accessible to men living outside the study area as well as those within it.

OPTION 4: REGIONAL GROWTH POINT

344. The fourth option envisages the area not only retaining its natural increase population and acting as a growth point for the coalfield, but also accommodating a further part of the expected natural increase of the region's population (+ 1, 300, 000 in the period 1966-2000). A build-up to a total population of 500, 000 at the end of the century is suggested - i.e. 140, 000 over and above the estimated natural increase population of the study area at the end of the century and 250, 000 more than the existing population. This option is essentially one which could only be fully considered in the context of a planning strategy for the region as a whole.

345. Expansion of this order is comparable in scale to the "new city" projects being undertaken at e.g. Milton Keynes in Buckinghamshire and Preston-Leyland-Chorley in mid-Lancashire. It would take some years before such a major scheme began to take effect, so that in the period to 1975 the implications of this option would be the same as those for option 3. But whereas under the third option, the rate of creation of male jobs could be allowed to fall after 1975, this option would entail a smaller fall in that rate.

346. The implications of this option in respect of strategic resources and environment are similar to those of the third option except that it makes even greater use of the area's resources, and the scale of development would give opportunities for a more ambitious and thorough improvement of the environment. In terms of land for industrial and housing development, more land for industry would be required after 1975,

15. "Employment Prospects in the Yorkshire Coalmining Areas" Yorkshire and Humberside Economic Planning Council, 1968 para. 8(e). The deficiency of 35,000 male jobs refers to the coalfield sub-division of the region, which excludes the Rotherham/Chapeltown and Wakefield/Dewsbury areas.

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and housing land to accommodate an additional 230, 000 over and above the land now available would be needed hy the end of the century. This figure is still well within an estimated capacity of over 300, 000 population, and enahles a choice to be made between alternative forms of development without incurring excessive developing costs. Expansion on this scale would involve a thorough reshaping of the pattern of development in the area and would represent a major town planning exercise.

347. These four options could well he amended in detail, hut it is thought that taken together they explore the main possibilities for the future of the Doncaster area. There is no doubt that the area is faced with an immediate and extreme problem of restructuring its basic industry. But there is also no doubt that it has considerahle resources which could provide a very large measure of support for new economic growth.

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APPENDIX

STATISTICAL SOURCES

A

This appendix provides some notes on the sources of statistical data used in the report and in Appendices B to F. A list of published sources is also included. Wherever possible Great Britain data have been given in the study for national comparison but where this was not available the England and Wales figures have been used.

ENERGY AND WATER AND SURFACE MINERALS

The data in Chapter 3 relating to energy prices were obtained direct from the industries concerned. Much of the information on water supply was provided by the Doncaster and District Joint Water Board. The transport cost data for sand and gravel were supplied by the Ministry of Public Buildings and Works specially for this study.

POPULATION

Population data in Chapter 4 and Appendix B relate to ths home population; this includes members of the armed forces. The sources of these data are the Registrar General's decennial Censuses, the 1966 10% Sample Census and the Registrar General's natural change data and annual estimates of population. It should be noted that the 1966 Sample Census is estimated to be under-enumerated nationally by about 1.4% and that data derived from it are subject to sampling errors whose magnitude increase as the size of the area under consideration decreases. In table 4.2 it is necessary to note that items (a) and (b) include migration within the study area whilst item (c) does not.

INDUSTRY AND EMPLOYMENT

Appendix C gives details of the Industrial Survey which provided the material for several parts of Chapter 5 and elsewhere in the report. Information used in Appendix D and Chapters 4 and 5 concerning smployment, unemployment, vacancies, special transport for employees and young persons entering employment are collected by the Department of Employment and Productivity for individual Employment Exchange and Youth Employment Office areas. Regional and national data about employment, unemployment, and related matters including earnings, are published in the Employment and Productivity Gazette. The activity rates shown in Appendix E are based on local data from the Census reports of 1951, 1961, 1966, regional data from the population tables of the Registrar General's Annual Statistical Review and employment estimates by the Department of Employment and Productivity. Data on new industrial buildings and extensions in table 5.6 were provided by the Board of Trade.

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SOCIAL ENVIRONMENT

(a) Housing: Statistics of housing were obtained from the Census reports and from the Ministry of Housing and Local Government. Calculations of future housing requirements and land availability are based on a 1966 survey carried out by the Ministry of Housing and Local Government. Where possible other bousing statistics have been revised to 1968. Local statistics on rateable values are published annually by the Ministry of Housing and Local Government in Rates and Rateable Values in England and Wales.

(b) Education: Reference is made in Chapter 4 (Table 4. 8) to the proportion of children staying on after the statutory school leaving age. This data was derived from List 69 published annually by the Department of Education and Science (see below for full reference). The data on oversize classes in table 6. 4 and school buildings in table 6. 5 were all obtained by special enquiries. The comparable national data on oversize classes is to be found in Statistics of Education published annually in five volumes by the Department of Education and Science. The regional and national data on school buildings are only available for 1962 and were published in School Building Survey 1962 (Ministry of Education). Material for table 6. 6 derives from List 71 for years up to 1963 and from List 69 in subsequent years. (Both lists are now discontinued).

(c) Health: Data on the provision of bospital beds were obtained from the Sheffield Regional Hospital Board. National and regional data on general practitioners and dentists (table 6.8) are published in the Annual Reports of the Ministry of Health. Local data were obtained from the Medical Executive Council's lists. The data on health and welfare service provision in Table 6. 9 were derived from Health and Welfare: The Development of Community Care (Cmnd. 3022) and more up to date information in paragraph 184 was provided by the local Medical Officers of Health.

(d) Shopping: data on retail turnover were derived from the 1950 and 1961 Censuses of Distribution.

PHYSICAL ENVIRONMENT

In Chapter 7 the statistics on climate were provided by the Meteorological Office and statistics on derelict land and air pollution were provided by West Riding County Council, Doncaster Borough Council and the Ministry of Housing and Local Government.

LAND RESOURCES

The analysis of noise levels in paragraph 250 and Figure 14 was carried out by the County Planning Officer of the West Riding County Council using formulae evolved by E. J. Ricbards (former Director of the Institute of Sound and Vibration Research).

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LIST OF PUBLISHED SOURCES OF STATISTICS AND OTHER REFERENCES

1. Review of Yorkshire and Humberside - Yorkshire and Humberside Economic Planning Council, H. M. S. O., 1966.
2. Census - reports of the decennial census of population 1901-1961 and of the 1966 Sample Census.
3. Registrar General's annual estimates of the population of England and Wales and of Local Authority areas.
4. British Landscape Through Maps - The Doncaster Area by B. E. Coates and G. M. Lewis, Geographical Association 1966.
5. The Doncaster Regional Planning Scheme, by Patrick Abercrombie and T. H. Johnson, 1922.
6. Railway Policy, Cmnd. 3439, 1967.
7. An Airport Programme for Yorkshire and Humberside, Alan Stratford & Associates, Maidenhead, Berkshire, 1967.
8. Secondary Education in each Local Authority Area (List 69) Department of Education and Science, H. M. S. O.
9. Fuel Policy, Cmnd. 3438, 1967.
10. Committee on Higher Education Evidence, Part 1, Volume A, Cmnd. 2154, H. M. S. O., 1961.
11. Half our Future, Central Advisory Council for Education (England), H. M. S. O., 1963.
12. Employment and Productivity Gazette - H. M. S. O., (monthly).
13. Housing Statistics - Ministry of Housing and Local Government, H. M. S. O. (quarterly).
14. Rates and Rateable Values in England and Wales - Ministry of Houaing and Local Government H. M. S. O., (annually).
15. Statistics of Education - (5 volumes) Department of Education and Science H. M. S. O., (annually).
16. School Building Survey 1962, Ministry of Education H. M. S. O.
17. Selected Statistics relating to Local Education Authorities in England and Wales (List 71) Department of Education and Science, H. M. S. O.
18. Annual Reports of the Ministry of Health, H. M. S. O.
19. Health and Welfare: The Development of Community Care Cmnd. 3022, H. M. S. O. 1966.
20. Census of Distribution - reports for 1950 and 1961, H. M. S. O.
21. The Changing Urban Hierarchy by R. D. P. Smith, in Regional Studies, Vol. 2, No. 1, 1968.
22. Preparation for Retirement - Yorkshire Council for Social Service, 1966.

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APPENDIX

B

HOME POPULATION: STATISTICS

TABLE B.1. HOME POPULATION: CHANGES 1961-1968

Area	Home Population 1961	Estimated Changes 1961-1968						Home Population 1968
		Total		By Births and Deaths		Net Balance including migration		
		No.	%	No.	%	No.	%	
Study Area	229,520	16,780	7.3	15,981	7.0	799	0.3	246,300
Doncaster C.B.	85,910	- 1,660	- 1.9	3,741	4.4	- 5,401	- 6.3	84,250
Adwick U.D.	18,190	560	3.1	799	4.4	- 239	- 1.3	18,750
Bentley U.D.	22,960	900	3.9	1,680	7.3	- 780	- 3.4	23,860
Doncaster R.D.	67,170	12,500	18.6	6,561	9.8	5,939	8.8	79,670
Thorne R.D.	35,290	4,480	12.7	3,200	9.1	1,280	3.6	39,770
Yorkshire and Humberside*	4,595,900	174,700	3.8	194,600	4.2	- 19,900	- 0.4	4,803,600
Great Britain	51,389,000	2,391,500	4.7	2,312,100	4.5	79,400	0.2	53,780,500

* As a result of boundary extensions in 1967 the home population was inflated by about 33,000 persons. Consequently the total change figure does not equal the difference between the two end dates.

TABLE B.2. TERMINAL EDUCATION AGE OF POPULATION AGED 25 YEARS AND OVER, 1961

Area		Terminal Education Age (%)					
		Under 15	15	16	17-19	20+*	Not Stated
Study Area	Males	71.3	10.0	5.5	2.3	2.5	8.4
	Females	71.8	9.6	5.3	2.7	1.9	8.7
Yorkshire and Humberside	Males	73.0	9.8	6.8	3.3	2.9	4.2
	Females	74.7	9.3	6.0	3.4	2.2	4.4
England and Wales	Males	65.5	11.1	7.8	5.2	4.0	6.4
	Females	65.7	10.7	7.6	6.0	2.8	7.2

* Including those for whom full-time education was continuing.

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TABLE B.3. AGE/SEX STRUCTURE OF THE POPULATION, 1951, 1961 and 1966

Area		Age/Sex Groups (percentages)							
		0 - 14		15 - 39		40 - 59/64		60/65 +	
		Male	Female	Male	Female	Male	Female	Male	Female
Great Britain	1951	11.5	11.1	17.0	17.9	14.9	14.0	4.5	9.0
	1961	12.0	11.4	19.5	16.4	15.4	13.8	4.5	10.2
	1966	11.9	11.3	16.5	16.2	15.3	13.3	4.7	10.7
Yorkshire and Humberside	1951	11.6	11.1	17.0	17.7	15.2	14.1	4.4	8.9
	1961	12.1	11.5	16.3	16.1	15.7	13.7	4.4	10.1
	1966	12.1	11.5	16.4	16.0	15.6	13.2	4.6	10.5
Study Area	1951	12.5	12.3	18.5	18.6	15.3	12.5	3.9	6.4
	1961	13.5	12.7	17.7	17.2	15.1	12.1	4.1	7.6
	1966	14.0	13.1	17.1	16.9	15.0	12.1	4.2	7.7
Doncaster C.B.	1951	11.1	10.9	17.8	18.6	16.0	13.9	4.3	7.6
	1961	12.2	11.6	16.9	16.6	16.0	13.1	4.5	9.1
	1966	12.0	11.3	16.5	16.4	15.5	13.4	5.1	9.8
Adwick-le-Street U.D.	1951	13.1	13.4	18.4	18.8	15.2	11.4	3.9	5.9
	1961	13.4	12.7	17.0	16.5	16.2	12.4	4.3	7.4
	1966	14.4	12.5	16.1	16.1	16.4	14.1	4.5	8.0
Bentley-with-Arksey U.D.	1951	12.3	12.3	18.6	18.7	15.4	12.4	3.6	6.4
	1961	13.8	13.0	17.5	17.5	15.0	12.1	3.9	7.0
	1966	15.9	12.6	16.4	17.2	15.1	12.3	4.0	6.6
Doncaster R.D.	1951	13.3	12.8	18.7	18.5	15.3	12.0	3.6	5.6
	1961	14.4	13.4	18.5	18.0	14.4	11.5	3.6	6.4
	1966	14.6	14.3	17.8	17.3	14.6	11.6	3.5	6.4
Thorne R.D.	1951	14.4	13.9	20.1	18.4	13.9	10.9	3.2	5.2
	1961	14.9	13.8	19.2	17.4	13.9	10.8	3.7	6.5
	1966	15.6	15.4	18.3	17.4	13.3	10.3	3.6	6.2

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APPENDIX

INDUSTRIAL SURVEY

C

INTRODUCTORY NOTE

1. In the course of its study of the Doncaster area the joint study team undertook an industrial survey. The primary purpoae of this survey was to draw on the fund of knowledge available to those intimately concerned with the operation and future planning of manufacturing industry in the district. The paragraphs following provide more details concerning some of tbe points covered in the report. The survey was conducted under an undertaking that information provided by firms would be treated in confidence. Consequently items in tables are grouped in order to guard against disclosure of data given in confidence.

OBJECTIVES OF THE INDUSTRIAL SURVEY

2. The objectives of the survey were:-

(i) to provide information concerning industry and its future prospects, in particular to throw light on the number of jobs likely to be provided by exiating firms;

(ii) to discover any limiting factors on expansion and to give industry an opportunity to comment on any deficiencies in local services;

(iii) to identify advantagea and disadvantages of the area for different industries and to throw light on the suitability of the area for planned physical and economic growth.

3. It was apparent from the beginning that the value of the information would be enhanced by relating it to the broader statistical picture concerning the industrial structure of the study area. In particular, the local importance of coalmining was noted and it was decided to approach the N. C. B. separately but using questions basically similar to those asked in tbe survey of manufacturing firms.

PROCEDURE

4. The Board of Trade examined their records of manufacturing firms. These records covered 130 firms in the study area, including 116 for which employment figures were available for 1966. It was decided that information for the purposes of the survey would be sought from those units employing 25 or more persons. The total number of establishments approached for information was 98. These units employed 31,627 workers at mid 1966. Seventeen firms were visited and information from these was mainly collected by interview. Other cases were dealt with by postal questionnaire.

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RESPONSE

5. Fiftyone of the 98 firms provided information although a few preferred to leave some questions unanswered. The 51 responses accounted for 87% of total employment in those approached. Table C. 1 shows insured employees in manufacturing industries in the study area, employment in firms selected for the purposes of the industrial survey and employment in those which provided answers to all or some of the questions.

TABLE C. 1: RESPONSE TO THE INDUSTRIAL SURVEY

Total Insured Employees in Manufacturing at mid-1966	Units Selected for Inquiry		Of Previous Column those which responded	
	Cases	Employed at May 1966	Cases	Employed at May 1966
32,512	98	31,627	51	27,830

EMPLOYMENT FORECASTS

6. Of the 51 firms which provided information about employment at December 1967, 40 offered forecasts of changes of employment between 1967 and 1971. These estimates of employment changes were used in formulating the labour demand estimates discussed in Chapter 5 and Appendix D. 1.

TABLE C. 2: ANALYSIS OF FIRMS WHICH PROVIDED FORECASTS OF EMPLOYMENT AT 1971

Standard Industrial Classification Orders		Firms which provided Dec. 1967 Employment figures			Those which made forecasts for 1971				
		Cases	Employed at 1967		Cases	Employed at			
						1967		1971	
			Total	Males		Total	Males	Total	Males
VIII	Vehicles	2	11,392	9,833	2	11,221	9,682	13,568	11,817
IX	Metal Goods not elsewhere stated	4			3				
VII	Shipbuilding	2			1				
VI	Engg. and Elect. Goods	14	3,945	2,210	9	3,265	1,632	3,702	1,761
V	Metal Mnfre.	2			2				
XIII	Glass, Bricks, Tiles, etc.	8	4,081	2,876	7	4,071	2,866	3,907	2,818
IV	Chemicals and Allied Ind.	3			3				
X	Textiles	3	4,630	3,135	3	4,544	3,129	4,593	3,138
XII	Clothing and Footwear	5			4				
III	Food and Drink	5	1,275	838	4	800	459	1,049	510
XV	Paper, Printing etc.	1			1				
XVI	Other Manufactures	2			1				
III-XVI	All Mfg. Industries	51	25,323	18,892	40	23,901	17,768	26,819	20,044

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POST WAR ESTABLISHMENTS (see text, paras. 121 to 125)

7. The study area has, at no time, enjoyed the financial advantages of Development Areas or Development Districts listed under the terms of post war distribution of industry policy. Nevertheless, twenty-seven of 50 cases covered by Table C. 3 are post-war developments.

TABLE C.3: POST WAR ESTABLISHMENTS

Established After 1945		Established 1945 or Before		Total Cases	
Cases	Employed at December 1967	Cases	Employed at December 1967	Cases	Employed at December 1967
27	9,080	23	16,232	50	25,312

8. Firms were asked to specify the advantages of their locations in the Doncaster area. It was decided that firms should themselves state the factors uppermost in their minds and no list of location factors was provided to prompt them. The replies of post 1945 firms are summarised in Table C. 4. Detailed information is given in paragraphs 129 and 130 and Table 5.5 in the report.

TABLE C. 4: LOCATION ADVANTAGES FOR POST WAR ESTABLISHMENTS

Group of Advantages	Number of Mentions
(i) Labour Supplies etc.	19
(ii) Good Communications	12
(iii) Market Considerations other than Links to Coalmining	9
(iv) Links with Coal Industry	6
(v) Nearness to, or Easy Links with H. Q.	3
(vi) Access or Nearness to Materials and Supplies (other than coal)	2
(vii) Good Housing or Services	1
(viii) Factors relevant to location of the site rather than to the Study Area as such	12
Total Mentions	64

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SITE AREAS (see text, paras. 131 and 225)

9. Firms were asked to state the area of their sites and Table C. 5 summarises information given by 46 firms answering this question.

TABLE C. 5: SITE AREAS

Description of Information	Pre-1945 Firms	Post-1945 Firms	Total
Number of cases	19	27	46
Total employed at December 1967	14,141	9,080	23,221
Site Area	885.4 acres	335 acres	1,220.4 acres
Area in use for Buildings and/or Plant	213.7 acres	80.8 acres	294.5 acres
Area available for Development	314.6 acres	155.8 acres	470.4 acres
Other Land	357.0 acres	97.8 acres	454.8 acres

SALES (para. 127)

10. Thirty-six firms which together accounted for almost 50% of the workers employed in manufacturing industries provided some details concerning sales and their geographic distribution.

TABLE C. 6: PROPORTIONS EXPORTED, PROPORTIONS SOLD IN THE STUDY AREA, AND IN OTHER HOME MARKETS

Number of Cases	Total Employed in 1967	Total Sales (1 year)	Proportion Exported	Sales in the Doncaster Study Area	Other Home Markets
No.	No.	£	%	%	%
36	14,520	66,126,076	33.3	2.0	64.7

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11. In Table C.7 below, 51 firms provided estimates concerning the means of transport used for carrying their products. After taking into account the sizes of the individual firms, it was estimated that the following proportions of the output of the workers were transported by road, rail, etc.:-

TABLE C.7: MEANS FOR TRANSPORTING THE OUTPUT OF WORKERS IN THE DONCASTER STUDY AREA

Means of Transport Used	Estimated proportions of output transported
	%
Road	71.4
Rail	27.7
Waterways, Postal	0.9
Total	100.0

MATERIALS AND SUPPLIES (para. 126)

12. The thirty-six firms who provided information about principal materials and a percentage breakdown of sources of supply employed 15,361 workers at December 1967. This information covered items valued at £31,960,047 of which 62% were transported by road. Most industry groups in the study area get more than 80% of their supplies by road. However, though road transport is more important than rail in the total figures, rail is also important, particularly to some of the larger firms.

GRADES OF LABOUR EMPLOYED

13. Manufacturing firms approached in the industrial survey were asked to indicate the numbers employed at December 1967 in various grades. Table C.8 following, summarises the response to this part of the questionnaire.

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TABLE C. 8: GRADES OF LABOUR EMPLOYED IN MANUFACTURING INDUSTRY AT DECEMBER 1967

Description of Grades of Employees	Manufacturing Industry	
	Males (40 cases)	Total (39 cases)
Management and Supervisory	8. 6	6. 8
Technical and Scientific	3. 4	2. 6
Clerical and Office	7. 5	9. 3
Skilled workers	24. 3	17. 8
Semi-skilled workers	28. 9	27. 7
Apprentices	5. 2	3. 7
Other full-time workers	21. 9	30. 6
Part-time workers	0. 2	1. 5
Total	100	100
Total (numbers involved)	13,390	18,076

CHANGES IN RECRUITMENT EXPERIENCES (paras. 147 and 148)

14. Firms were asked whether recruitment of full-time workers has changed significantly over the last ten years. Table C. 9 following summarises their replies.

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TABLE C. 9: CHANGES IN RECRUITMENT EXPERIENCES (TEN YEAR PERIOD)

Change over last 10 years in recruitment experience	Number of firms responding	Total Employed in Cases responding and % of total in all casea	
	Cases	Number	%
Recruitment now more difficult	19	11,838	46.7
Recruitment now easier	3	3,170	12.5
No significant change	24	9,058	35.8
No comment on this question	5	1,257	5.0
Totals	51	25,323	100

15. Firms were also asked to indicate their experiences, over the last two years, in the recruitment of full-time labour. Tables C. 10 and C. 11 summarise replies to this question for male and female workers respectively.

TABLE C. 10: EXPERIENCES OF RECRUITMENT OF FULL-TIME MALE WORKERS (2 YEARS PERIOD)

Numbers of Cases and percentages of employees covered by the replies

Category of Male Labour		Total Cases	Numbers and Importance of those who indicated recruitment as below			Firms which did not indicate
			Difficult	Satisfactory	Easy	
Management and Supervisory	No.	51	14	17	1	19
	% E.	100	35.6	46.3	0.1	18.0
Technical and Scientific	No.	51	13	10	1	27
	% E.	100	46.0	31.6	0.1	22.3
Clerical and Office Staff	No.	51	9	20	2	20
	% E.	100	13.4	78.9	0.3	7.3
Skilled Workers	No.	51	16	14	2	19
	% E.	100	26.7	55.4	1.1	16.9
Semi-Skilled	No.	51	9	20	4	18
	% E.	100	3.6	74.2	6.8	15.3
Apprentices	No.	51	4	21	6	20
	% E.	100	0.8	59.1	26.4	13.7
Other Full-time Workers	No.	51	9	24	5	13
	% E.	100	5.2	70.0	17.2	7.6
School Leavers	No.	51	9	25	6	11
	% E.	100	7.0	70.0	19.8	3.2

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TABLE C. 11: EXPERIENCES OF RECRUITMENT OF FULL-TIME FEMALES (2 YEARS PERIOD)

Numbers of cases and percentages of employees covered by the replies

Category of Female Labour		Total Cases	Numbers and % of Employment of those who indicated as below:-			Firms which did not indicate
			Difficult	Satisfactory	Easy	
Management and Supervisory	No.	51	4	8	4	35
	% E.	100	4.4	27.6	14.9	53.0
Technical and Scientific	No.	51	5	2	1	43
	% E.	100	15.0	12.5	-	72.5
Clerical and Office Staff	No.	51	11	20	5	15
	% E.	100	24.7	55.0	16.0	4.4
Skilled Workers	No.	51	6	1	1	43
	% E.	100	5.1	2.5	-	92.4
Semi-Skilled	No.	51	7	5	2	37
	% E.	100	6.3	24.8	0.5	68.3
Apprentices	No.	51	3	2	1	45
	% E.	100	1.8	3.9	-	94.4
"Other Full-time" Workers	No.	51	7	17	5	22
	% E.	100	17.3	60.8	7.5	14.3
School Leavers	No.	51	7	15	9	20
	% E.	100	16.5	55.4	19.5	8.5

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APPENDIX

D

EMPLOYMENT STATISTICS

NOTES ON EMPLOYMENT STATISTICS

Except for Table D.1, statistics of employment, unemployment and unfilled vacancies in the study area are aggregates of figures for the Department of Employment and Productivity Employment Exchange areas of Doncaster (including Askern) and Thorne.

Employment statistics are subject to sampling errors which can he substantial and therefore all figures are shown to the nearest hundred, and percentages to the nearest whole number. For the same reason industries employing fewer than 2, 500 in the study area are not shown separately.

A definition of "unlocated workers" is given at the foot of these notes. Most of these workers are in the service industries, especially the distributive trades. In addition permanent civil servants and G.P.O. employees who do not hold National Insurance cards are not allocated to local areas. "Unlocated workers" and permanent civil servants etc. are therefore included in national and regional estimates only, and not in estimates for local areas. This means that figures for the study area are understated and are not strictly comparable with those for the Yorkshire and Humberside region or Great Britain. In particular the study area's proportion of service employment is underestimated.

In 1959 the Standard Industrial Classification was revised and employment figures for individual industries up to and including 1958 are not comparable with those for 1959 onwards. Only figures for the total number of employees are therefore given for the period before 1959. Because cyclical fluctuations affect the numbers employed, figures are given for years at roughly similar stages in the economic cycle. There are a number of other discontinuities in the time series of figures which distort changes between 1959 and 1967, in particular the reclassification of a substantial number of establishments between 1966 and 1967 because additional information became available following the introduction of Selective Employment Tax. It has not been possible to adjust the local figures to eradicate the effects of this reclassification, and accordingly for purposes of comparison the regional and national industry changes shown ignore this discontinuity. Additionally the method for estimating the number of employees in Employment Exchange areas was changed in 1962.

Because the Yorkshire and Humberside region was not formed until 1965, it has only been possible to base regional unemployment percentage rates on official statistics of total employees from that year. For previous years it has been necessary to use employment estimates, and unemployment percentages based on them may be slightly over-estimated.

UNLOCATED WORKERS

Annual employment estimates for local areas are mainly based on the number of National Insurance cards exchanged within the three month period beginning on the first Monday in June, and on information supplied by employers during this period. Although

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most carda exchanged by employers in a particular area are for persons employed locally, some are for workers in other parts of the country. When an employer reveals that he has exchanged cards for 20 or more workers in other districts he is asked to state the number involved and (for industries except Distributive Trades) to list the area of employment and number involved for any group of 10 or more. Workers "located" in this way appear in the employment estimates for the local area in which they are employed. Workers who remain "unlocated" do not appear in any local area estimates but they are included in estimates for the region and in national estimates.

TABLE D.1: ESTIMATED OUTPUT, PRODUCTIVITY AND MECHANISATION AT MINES OPERATED IN THE NATIONAL COAL BOARD'S DONCASTER AREA[1]

Item	Year	Doncaster Area		Great Britain
		Data	% of G.B. Total or Index (G.B. =100)	
Output of saleable coal ('000 tons)	1963/64	9,848	5.2%	187,560
	1964/65	10,272	5.6%	184,098
	1965/66	9,750	5.6%	174,424
	1966/67	8,601	5.2%	164,766
	1967/68	9,349	5.7%	162,743
Average number of wage earnera on Colliery books[2] (thousands)	1963/64	25.7	5.0%	517.0
	1964/65	24.8	5.0%	491.0
	1965/66	23.1	5.1%	455.7
	1966/67	22.1	5.3%	419.4
	1967/68	21.2	5.4%	391.9
Output per man shift overall (cwt.)	1963/64	37.2	111	33.4
	1964/65	40.5	116	34.8
	1965/66	42.2	117	36.1
	1966/67	38.4	105	36.6
	1967/68	43.3	111	39.0
Percentage of output power loaded	1964/65	82.7	110	75.0
	1965/66	92.2	114	80.7
	1966/67	94.6	110	85.7

Source:- Ministry of Power Statistical Digest, 1967.

Notes:- 1. The N.C.B. Doncaster area covers a somewhat wider area than the study area in this report.

2. Numbers of wage earners on colliery books refers to industrial grade workers including colliery under-officials up to the rank of overman but exclude under-managers, other administrative staff and clerical workers. The figures are therefore less than the statistics of employees in employment in the coalmining industry which are collected by the Department of Employment and Productivity.

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TABLE D. 2: CHANGES IN TOTAL NUMBERS OF EMPLOYEES IN EACH EMPLOYMENT EXCHANGE AREA IN THE STUDY AREA 1953-1959-1967

Thousands

AREA	TOTAL EMPLOYEES					MALES					FEMALES				
				Change					Change					Change	
	1953	1959	1967	1953-59	1959-67	1953	1959	1967	1953-59	1959-67	1953	1959	1967	1953-59	1959-67
DONCASTER E.E.A.*	74.6	83.7	88.4	+ 9.1	+ 4.7	55.8	61.7	60.9	+ 5.9	- 0.8	18.8	22.1	27.6	+ 3.3	+ 5.5
ASKERN (sub-office)	2.8	3.6	3.4	+ 0.8	- 0.2	2.6	3.2	2.9	+ 0.6	- 0.4	0.3	0.3	0.5	-	+ 0.2
THORNE E.E.A.	9.8	8.6	9.1	- 1.2	+ 0.5	8.1	6.4	5.9	- 1.7	- 0.5	1.7	2.2	3.2	+ 0.5	+ 1.0
TOTAL: STUDY AREA	87.2	95.9	100.9	+ 8.7	+ 5.0	66.5	71.3	69.6	+ 4.8	- 1.7	20.7	24.6	31.3	+ 3.9	+ 6.7
TOTAL: YORKSHIRE AND HUMBERSIDE	1,941.2	2,004.1	2,068.0	+ 62.9	+ 63.9	1,295.9	1,324.3	1,330.1	+ 28.4	+ 5.8	645.3	679.8	736.2	+34.5	+ 58.4
TOTAL: GREAT BRITAIN	20,880.0	21,870.0	23,294.0	+990.0	+1,424.0	13,720.0	14,230.0	14,736.0	+510.0	+506.0	7,160.0	7,640.0	8,558.0	+480.0	+918.0

Notes: 1. As figures are rounded to the nearest hundred they do not necessarily produce the totals or changes shown.

2. *Excludes Askern sub-office.

TABLE D. 3: CHANGES IN NUMBER OF TOTAL EMPLOYEES BY INDUSTRY IN THE STUDY AREA BETWEEN 1959 AND 1967

Order or MLH	Industry	1959	1963	1967	1959-63	1963-67	1959-67
II (incl. 101)	Mining and Quarrying (Coal Mining)	25,700 (25,400)	22,500 (22,300)	21,200 (20,800)	-3,200 (-3,200)	-1,300 (-1,400)	-4,500 (-4,600)
I and II	Sub Total: Primary Industries	27,400	24,100	22,500	-3,300	-1,600	-4,900
VI	Engineering and Electrical Goods	2,300	3,300	4,400	+1,000	+1,100	+2,100
VIII	Vehicles	11,100	9,400	6,800	-1,800	-2,600	-4,300
IX	Metal Goods not elsewhere specified	3,600	4,000	4,300	+ 400	+ 300	+ 700
X	Textiles	2,300	2,600	3,700	+ 300	+1,100	+1,400
XIII	Bricks, Pottery, Glass, Cement etc.	4,300	4,800	4,200	+ 500	- 600	- 100
(incl. 463)	(Glass)	(3,500)	(4,000)	(3,600)	(+ 500)	(- 400)	(+ 100)
remainder	All other Manufacturing Industries	6,600	6,500	7,200	- 100	+ 700	+ 600
III-XVI	Sub Total: Manufacturing Industries	30,300	30,600	30,500	+ 400	- 100	+ 300
XVII	Construction	5,600	7,700	8,700	+2,100	+1,000	+3,100
XIX	Transport and Communication	7,200	6,100	5,900	-1,100	- 300	-1,400
(incl. 701)	(Railways)	(5,000)	(3,900)	(3,600)	(-1,100)	(- 300)	(-1,300)
XX	Distributive Trades	9,100	9,300	9,700	+ 200	+ 500	+ 600
(incl. 820)	(Retail Distribution)	(7,500)	(7,500)	(7,800)	(-)	(+ 300)	(+ 300)
XXII	Professional and Scientific Services	5,800	6,800	9,400	+1,000	+2,500	+3,500
(incl. 872)	(Educational Services)	(3,800)	(4,500)	(5,700)	(+ 700)	(+1,200)	(+1,900)
(and 874)	(Medical and Dental Services)	(1,600)	(1,800)	(3,100)	(+ 200)	(+1,300)	(+1,500)
XXIII	Miscellaneous Services	5,200	7,200	7,900	+2,000	+ 700	+2,700
(incl. 884)	(Catering, Hotels etc.)	(1,600)	(2,500)	(3,200)	(+1,000)	(+ 700)	(+1,700)
XXIV	Public Administration	3,300	3,400	3,300	+ 200	- 200	-
(incl. 906)	(Local Government Service)	(2,700)	(2,900)	(2,700)	(+ 200)	(- 200)	(+ 100)
	All other Service Industries	2,000	2,300	2,700	+ 300	+ 400	+ 800
XVIII-XXIV	Sub Total: Service Industries	32,600	35,200	38,900	+2,500	+3,700	+6,200
	GRAND TOTAL	95,900	97,600	100,900	+1,700	+3,300	+5,000

Notes: 1. Industries with less than 2,500 employees are not shown separately.

2. As figures are rounded to the nearest hundred they do not necessarily produce the totals or changes shown.

3. There are a number of discontinuities in the time series of figures, which may distort changes in the study area over the period.

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TABLE D.4: ANNUAL AVERAGES OF UNEMPLOYED PERSONS IN THE STUDY AREA 1957-1968

YEAR	AVERAGE NUMBERS UNEMPLOYED								
	TEMPORARILY STOPPED			WHOLLY UNEMPLOYED			TOTAL REGISTER		
	MALES	FEMALES	TOTAL	MALES	FEMALES	TOTAL	MALES	FEMALES	TOTAL
1957	19	12	31	705	466	1, 171	724	478	1, 202
1958	9	32	41	883	676	1, 559	892	708	1, 600
1959	23	11	34	1, 129	715	1, 844	1, 152	726	1, 878
1960	5	9	14	965	630	1, 595	970	639	1, 609
1961	42	6	48	806	534	1, 340	848	540	1, 388
1962	20	30	50	1, 206	653	1, 859	1, 226	683	1, 909
1963	164	23	187	1, 758	721	2, 479	1, 922	744	2, 666
1964	24	8	32	1, 436	532	1, 968	1, 460	540	2, 000
1965	14	16	30	1, 153	460	1, 613	1, 167	476	1, 643
1966	154	12	166	1, 389	543	1, 932	1, 543	555	2, 098
1967	22	20	42	2, 280	737	3, 017	2, 302	757	3, 059
1968	15	3	18	3, 510	699	4, 209	3, 524	702	4, 226

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TABLE D.5: UNEMPLOYMENT RATES, 1957-68

YEAR	Annual Average - Total Unemployment								
	DONCASTER STUDY AREA			YORKSHIRE AND HUMBERSIDE			GREAT BRITAIN		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
1957	1.1	2.1	1.3	1.0	0.7	1.0	1.5	1.3	1.4
1958	1.3	3.0	1.7	1.7	1.1	1.9	2.3	1.8	2.1
1959	1.6	3.0	2.0	1.9	1.3	1.9	2.4	1.7	2.2
1960	1.3	2.6	1.7	1.3	0.9	1.2	1.8	1.3	1.6
1961	1.2	2.1	1.4	1.1	0.8	1.0	1.7	1.1	1.5
1962	1.8	2.6	2.0	1.7	1.0	1.7	2.3	1.4	2.0
1963	2.7	2.8	2.7	2.1	1.2	2.0	3.0	1.6	2.5
1964	2.1	2.0	2.0	1.4	0.9	1.3	1.9	1.1	1.6
1965	1.7	1.7	1.7	1.3	0.7	1.1	1.7	0.9	1.4
1966	2.2	1.9	2.1	1.5	0.7	1.2	1.9	0.9	1.5
1967	3.3	2.6	3.1	2.8	1.0	2.1	3.0	1.3	2.4
1968	5.1	2.2	4.2	3.4	1.0	2.6	3.2	1.1	2.4

Note: Rates above the national average are underlined.

TABLE D.6: MONTHLY AVERAGE OF UNFILLED VACANCIES FOR MALES AND FEMALES IN THE DONCASTER STUDY AREA 1957-1968

YEAR	Average number of unfilled vacancies		
	MALES	FEMALES	TOTAL
1957	947	243	1,190
1958	823	200	1,023
1959	526	191	717
1960	1,093	209	1,302
1961	1,801	222	2,023
1962	1,036	151	1,187
1963	395	184	579
1964	739	193	932
1965	767	252	1,019
1966	886	275	1,161
1967	587	200	787
1968	392	206	598

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APPENDIX

E

EMPLOYMENT FORECASTS

LABOUR DEMAND

Demand estimates for 1971 and 1975 have been formulated by assessing likely demands in individual industry groupings. These are summarised in Table 5.12. In arriving at tbe estimates, regard has been paid to trends in the study area over recent years, to regional and national expectations up to 1971, and to information from the Industrial Survey and other known local factors.

There are several difficulties in forecasting for small areas. Due to the small numbers of employees involved, the opening or closing of a single major establishment, or substantial changes in a large undertaking can have an appreciable influence on overall demand. This applies with particular force to tbe Doncaster study area, with its large proportion in coalmining and its dependence on a few large firms for a substantial part of its manufacturing employment. Additionally there are inaccuracies in the basic employment statistics for small areas, particularly due to the exclusion of unlocated workers and civil servants. For the demand estimates an element has been introduced for these workers, but this is largely an arithmetical estimate based on the proportions which local industries bear to regional employment figures.

LABOUR SUPPLY

Forecasting future labour supply is similarly particularly difficult in the case of small areas. Small numbers mean a greater potential margin of error, unlocated workers for small areas can only be roughly estimated; travel-to-work patterns affect activity rates, as do boundary differences between Employment Exchange and Local Authority areas. The margin of error to which the estimates are subject is considered and accordingly a range of forecasts, rather than one specific forecast, has been prepared.

The labour supply estimates have been made by applying assumed employee activity rates (i.e. excluding self-employed and Her Majesty's Forces) to estimates of the area's resident population, aged 15 and over, in 1971 and 1975. Only one set of estimates has been prepared, based on "natural increase" only and excluding migration. Past trends show slight net inward migration but this is partly due to the influx of coalminers from Scotland and the North East whicb is unlikely to be a factor in the future.

Boundary differences between tbe study area's Employment Exchange areas and ths Local Autborities whose figures were used for the population projections meant the exclusion and inclusion of several small villages which broadly balanced, witb the exception of Harworth, for which an adjustment has been made.

In estimating the likely future level of activity rates, tbe rates for males and females in 1959, 1963 and 1966 were considered in relation to the corresponding rates for Great Britain. Differentials revealed by this comparison were tben applied to the national forecast figures for 1971 and 1975, after modification in the light of local

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circumstances. The 1975 national forecast takes into account the raising of the school leaving age in 1973.

The male activity rate in the study area decreased between 1959 and 1966 at a much faster rate than nationally, but in 1966, at 78.9, was still substantially higher than Great Britain's 76.3. The study area's rates are inflated by the daily travel-to-work pattern; there was a net inward movement of approximately 4,900 males in 1961 and 3,600 in 1966, numbers travelling into the area declining slightly and numbers travelling out increasing by 25%. This decline in net inward movement is one of the reasons for the reduction in the activity rate. Other reasons for the reduction appear to be:

(1) A change in N.C.B. retirement policy which took place in 1960, and which resulted in the compulsory discharge of all men over 65, and the gradual easing in demand for coalminers since 1958/59.

(2) An increase between 1959 and 1966 of some 7,000 in the male population aged 15 and over, while total employment dropped by several hundred.

The following local factors point towards a continuation of the fall in the study area's differential with Great Britain:-

(1) Contractions in coalmining are likely to lead to older redundant miners leaving the employment field.

(2) There is an increasing tendency locally for boys to stay on at school. This is a comparatively recent change in the study area which is not reflected to any appreciable extent in the figures up to 1966.

(3) The past trend for net inward travel to decline may be expected to continue as coalmining contracts and the surplus of male labour intensifies.

A contrary factor to these is the study area's age structure, which is younger than either regionally or nationally. On balance, it was estimated that the differential with Great Britain would continue to decline, but at a slower rate than previously, the local activity rate reaching about the national level by 1975. The following ranges were accordingly used in calculating labour supply figures:-

Males	1966	1971	1975
Study Area	78.9	75.6 to 76.6	72.6 to 73.8
(Great Britain)	76.3	75.0 (latest estimate at time of writing)	73.2 (latest estimate at time of writing)

Although female activity rates in the study area are extremely low by comparison with the region and Great Britain, they are not significantly affected by travel-to-work factors. There appear to be two main reasons for the low rates - a lack of employment opportunities and the restrictive effects of male shift working and high earnings in coalmining. Employment opportunities for females have been rising and coalmining employment has declined. Both these trends have contributed to the rise in the rate, particularly between 1963 and 1966 (from 30.8 to 33.3, compared with 39.1 to 40.5 nationally).

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Local circumstances all indicate that the activity rate will continue to increase, and the differential with Great Britain to narrow:-

(1) The female rate is still abnormally low.

(2) Employment opportunities for females increased particularly between 1963 and 1966, and this trend continued in 1967 contrary to regional and national trends.

(3) With further contraction of coalmining employment, high earnings and shift working will have a less restrictive effect on female activity rates.

(4) The comparatively young age structure in the study area.

Taking these factors into account, the following rates were assumed:-

Females	1966	1971	1975
Study Area	33.3	35.5 to 36.5	35.9 to 37.1
(Great Britain)	40.5	39.1 (latest estimate at time of writing)	38.5 (latest estimate at time of writing)

These assume an increasing female rate through to 1975, although a reduction is forecast nationally, but this is justified by the abnormal female employment position in the study area.

Labour supply estimates for 1971 and 1975 are shown in Table E.1. Since the activity rates on which the estimates are based include an element for the unemployed, a deduction has been made from the total labour supply figures to give the effective labour supply. A total level of 2% unemployment has been allowed for.

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TABLE E.1: LABOUR SUPPLY - TOTAL AND EFFECTIVE

Thousands

	1966			1971			1975		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
Total Labour Supply	72.1	30.8	102.9	72.6 - 73.6	34.4 - 35.4	107.0 - 109.0	72.4 - 73.6	36.3 - 37.5	108.7 - 111.1
Deduction for Unemployment	1.0	0.4	1.4	1.7	0.4	2.1	1.7	0.4	2.1
Effective Labour Supply	71.1	30.4	101.5	70.9 - 71.9	34.0 - 35.0	104.9 - 106.9	70.7 - 71.9	35.9 - 37.1	106.6 - 109.0

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APPENDIX

F

AIR POLLUTION

The site classification code used in the National Air Pollution Survey is based on four categories (A - D, sub-divided as necessary to take account of potential domestic or industrial air pollution) together with a fifth category (E) which may apply to any of the preceding categories:-

(A) Residential district with high population density
e.g., old-fashioned terraced housing;

(B) residential district with low population density
e.g., modern private housing;

(C) industrial district;

(D) commercial centre of a town, characterised by central heating;

(E) smoke control area which may belong to any of the first four categories.

Unfortunately the seven sites within the study area do not comprise any high density residential (A) or industrial (C) districts. Doncaster (Wood Street) is classified D1/E having had smoke control since 1961-62; Bentley, Askern and Thorne are all D2 - small town centres with limited commercial areas mixed with old residential housing and possibly minor industry; Doncaster (Armthorpe Road) is classified B2/E "a medium density housing area, typically an inner suburb or housing estate with some ancillary industrial undertakings and surrounded by other industrial areas" - it is also covered by smoke control. Finally there are two B3 sites - "medium density housing surrounded by or interspersed with areas of low potenital air pollution output (parks, fields etc.) or any low density residential area" - Doncaster, (Hall Flatt Lane) and Barnby Dun.

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TABLE F.1: AIR POLLUTION: 1963-4 AND 1965-6:

Seven sites in the study area compared with selected sites elsewhere in the West Riding and with national averages for similar sites.

Mean daily concentrations (microgrammes per c.c.)

Type of Site	Site	Smoke		Sulphur Dioxide	
		1963-4	1965-6	1963-4	1965-6
B2/E	National average (4/6 stations)	103	81	137	129
	Of which Doncaster (Armthorpe Road)	148	126	100	134
	Yeadon	81	N/A	108	N/A
	Huddersfield	N/A	68	N/A	123
B3	National average (50 stations)	97	90	100	93
	Of which Doncaster (Hall Flatt Lane)	156	-	82	-
	Barnby Dun	113	131	112	127
	Barnsley	184	149	117	110
	Bradford	182	114	184	153
	Halifax	85	65	88	75
	Huddersfield	104	79	108	95
S5/E	National average (50 stations)	-	58	-	113
	Of which Doncaster (Hall Flatt Lane)	-	121	-	58
	Halifax	-	75	-	161
	Bingley	-	77	-	147
	Pudsey	-	121	-	169
D1/E	National average (18/25 stations)	125	103	232	239
	Of which Doncaster (Wood Street)	184	109	194	159
	Leeds	200	155	326	286
	Halifax	134	97	195	209
	Sheffield	90	77	246	156
	Wakefield	187	163	252	252
D2	National average (50 stations)	138	97	128	112
	Of which Askern	130 est.	100	190 est.	175
	Bentley	204	146	149	177
	Thorne	138	100	N/A	N/A
	Elland	192	205	212	255
	Horbury	220	150	243	189
	Hoyland Nether	246	228	153	153
	Pudsey	163	122	202	169

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Doncaster

An Area Study

Prepared by the:

Yorkshire and Humberside Economic Planning Council and Board
West Riding County Council
County Borough of Doncaster

London: Her Majesty's Stationery Office, 1969
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PREFACE

This report is in two parts. Part One sets out the strategy proposals of the Yorkshire and Humberside Economic Planning Council. Although based on Part Two of the report, which comprises the study by the joint team drawn from the Economic Planning Board and officers of the two local planning authorities concerned, the proposals are those of the Council.

The Economic Planning Council believe that the Doncaster area has many features favourable to industrial growth and is well suited to development as a growth zone. The appropriate scale of economic growth in the long term and the future role of the area in relation to the region as a whole will need to be considered as part of an overall regional strategy, which the Council will be preparing.

The Council would welcome views about the report and the proposals which are made. These views should be sent in writing to the Secretary, Yorkshire and Humberside Economic Planning Council, City House, Leeds, LS1 4PS.

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